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USERS' GUIDE TO THE TRACKING DATA PROCESSOR AND ORBIT DATA GENERATOR PROGRAMS

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FOREWORD

There are three user programs employed in the process of orbit determination from tracking data: the Tracking Data Processor (TDP), the description of which constitutes Section I of this document; the Orbit Data Generator (ODG) described in Section II; and the Orbit Determination Program (ODP) described in TM 33-204, "SPODP - Single Precision Orbit Determination Program", Melba W. Nead and Michael R. Warner, February 15, 1965.

This document is presented as a Users' Guide to the TDP and ODG and is intended to be of interest and help to the engineer concerned with the reduction of tracking data for use in orbit determination. The document is not intended as a detailed program specification, though useful interface information is supplied.

The programmer is indebted to J. H. Brown, N. S. Newhall, and E. G. Orozco for their contributions to the programming of the TDP and ODG. Valuable assistance in the design of the programs was made by M.S. Johnson, C.N. Cary, D.W. Trask, T.W. Hamilton, W.R. Wollenhaupt and J. P. Fearey. The programs have developed over a period of two years; they have had their antecedents in the JPL Tracking Data Editing Program originally developed for use in the Ranger and Mariner R Projects.

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SECTION I

USERS' GUIDE TO THE TRACKING DATA PROCESSOR

1.0 INTRODUCTION

The TDP accepts data from three sources: the disc, where it is stored by the mission-independent Editor; the user area (or in Mode IV, the on-line) card reader; and, in Mode IV, a magnetic tape of binary-coded decimal (BCD) card images. It generates a Master File on disc which is read by the Orbit Data Generator (ODG). This Master File is analogous to the Master Data Library generated from input telemetry data. After each updating the Master File is written on tape, as a permanent record, by the TDP. In the event that the disc file is lost, the Master File may be regenerated from this tape. When necessary or desirable, the tape may also be used to generate the Master File on the other 7094 in the system.

Many of the options in the program were added as a result of operational experience during the Mariner Mars '64 project. It is expected that additional options will be added as the necessity arises. Therefore, this guide should not be regarded as final and unvarying. As changes in operating procedure are made, addenda will be issued.

The TDP is a two-link program; the links are named TDPLK1 and TDPLK2. Link 1 performs Master File initialization functions, and Link 2 performs Master File updating functions. When the program is operating in Mode II (for definitions of modes, refer to Programming Standards for SFOF User Programs, EPD-125, Revision 1), Link 1 is entered only once; after Master File initialization, the program cycles through Link 2 in a saved condition. In normal use, control card input is only required the first time these links are entered; the card read function may then be suppressed and program operation becomes automatic, requiring only that the TDP be turned on when desired. The design philosophy has been to provide a program that will run as either a system program (that is, without user input) or, when necessary, as a user program that allows considerable flexibility in control options. This has resulted in increased program complexity, but operating efficiency has justified this sacrifice. It is hoped that future additions to the program will reflect the same philosophy.

2.0 OPERATION OF THE TDP UNDER JPTRAJ

The TDP operates under the JPTRAJ Monitor (Users' Guide for JPTRAJ (JPL Trajectory Monitor) (EPD-199)); it may be run in Mode II or Mode IV. Operation under IBSYS is somewhat cumbersome because of a conflict in tape assignments but is available under limited circumstances. A listing of a TDP source deck for a typical application appears at the conclusion of this paragraph. Reference to the JPTRAJ Monitor write-up will explain the content of the deck. In normal TDP use, only one data item (FILE1 or FILE2) need be entered. A description of all symbols that may be used in the TDP source deck is contained in Appendix A. Changes and additions to the TDP source deck are discouraged; they should be made only if the user is convinced that his particular application requires such changes and he understands clearly the potentially detrimental results of tampering with the source deck.

```
Column 1   Column 8   Column 16                    Column 71
   ↓          ↓          ↓                           |
*             DECK       TDPX                        |
*             TDPLK1     *                           |
FILE1  = 3 MICODE = (MA/D-1)                         |
*             TDPLK2                                 |
*             END                                    ↓
                                                     (0
```

NOTE: Column numbers do not apply to the third card listed above.

The TDP can be run only under the program names TDPX or TDPY. If any other source deck name is used, the comment

TDP CALLED BY ILLEGAL SOURCE DECK

will be printed and the program will abort.

TDPX and TDPY can be initialized for the same mission, for different missions, for different files, or for the same file. In general, the programs may not be time-shared; they may, however, be run sequentially. The TDP may be time-shared with the ODP, but not with the ODG. The action of TDPX and TDPY is similar; however, only TDPX interfaces with the System Editor (EDT94).

If the TDP is used only for restoring a Master File from tape, the source deck need not contain the reference to TDPLK2; the END card should follow the FILE symbol. The program will then terminate via ENDSYS after Master File initialization has been completed.

Following completion of Master File initialization, the comment

TDP***LINK 1 HAS PREPARED MISSION YY.

will be printed and the program will proceed to TDPLK2 (unless the mode described in the paragraph immediately preceding has been selected).

3.0 PROGRAM INITIALIZATION

In either Mode II or Mode IV, TDP must be initialized before processing is begun. Once the initialization process has been completed, the program may be cycled through TDPLK2 with little or no additional input necessary.

The TDP runs in a saved condition and does not call ENDSYS unless requested to do so. Normally, TDPLK1 is entered only for initialization purposes. When the TDP is first turned on, TDPLK1 is entered. The comment printed at the start of TDPLK1 is:

TDP-TRACKING DATA PROCESSOR-HAS ENTERED RECOVERY MODE

The source deck initialization is then checked. The checks performed are:

1) Is either file initialized for a nonzero mission number? If not, the program aborts.

2) Are both files initialized for a nonzero mission number? If so, the program aborts.

3) Is the mission number < 1000? If not, the program aborts.

If any of the three tests fails, the program prints.

INITIALIZATION ERROR

before aborting.

After file initialization has been checked, the contents of the file summary (FILE1 or FILE2) are printed on the Stromberg Carlson 3070 or, in Mode IV, the on-line printer under SW6 control. The comment on the administrative printer is:

TDP IS INITIALIZED FOR XXXXXX. MASTER FILE STATUS
IS ON 3070

XXXXXX is the BCD word entered as MICODE in the source deck. Note that this initialization is not necessarily that of the Master File selected by the FILE1 or FILE2 card. No check is made at this time for a consistent initialization; this check is made only after the Master File disposition has been determined.

The card reader is now selected. The ad printer comment is:

READY CARDS IN READER TO SELECT DESIRED OPTION.

When the system comment is

ENTER CARDS FOR TDPX FROM AREA 5

(or TDPY, or the particular area being used), option cards may be entered. These cards must be punched in strict format and are translated via the SFOF subroutine CARDS. The control deck must be followed by a card containing a (0 in Columns 71-72. The option cards are:

COLUMN 1	COLUMN 62
(CONTINUE WITH MASTER ON DISC	)
(NEW EPOCH - DESTROY MASTER	)
(INITIALIZE MASTER FROM TAPE	)

Two additional options exist but are unreliable in their action. These are:

(SAVE MASTER AND INITIALIZE FROM TAPE	)
(SAVE MASTER AND READ NEW EPOCH	)

It is strongly suggested that the use of these two options be avoided at present. The option card must be preceded by a card with a (1 in Columns 71-72.

3.1 CONTINUE Option

If this option is chosen, no further initialization is performed. However, the TDP initialization is checked against the Master File initialization; if the mission numbers disagree, the comment

MISSION ON DISC IS XX, NOT YY, AS REQUESTED.

is printed and the program aborts. YY is the mission number specified by the FILE word in the source deck, and XX is the mission number on the Master File. The file chosen is FILE1 or FILE2 as specified in the source deck.

The CONTINUE option may be selected by entering Option Switch 2 before the program is turned on. The program will look for the presence of a Master File on disc. If no Master File is present in the appropriate file, the comment

PLEASE NOTE - THE MASTER FILE IS NOT PRESENT ON DISC.

will be printed and the card reader selected. If the Master File is present, the program proceeds as though a CONTINUE card had been read, with no card reader select.

3.2 NEW EPOCH Option

If this option is chosen, a further entry is required in the control card deck. This is a GMT of epoch, written in sexagesimal:

YYMM0DDHH, NNSS000

YY = last two digits of year (e.g., 1965)

MM = Month

0 = numeric zero

DD = day of month

HH = hour

NN = minutes

SS = seconds

000 = numeric zeroes

This card must be preceded by a card containing a (2 in Columns 71-72.

3.3 INITIALIZE Option

If this option is chosen, the TDP will initialize the Master File from SYSUT2 (dialed in as B1). This tape must previously have been written by the TDP as a Master File save tape. The TDP will initialize the file from which this tape was written; the file is not necessarily that for which the TDP is currently initialized. It is only possible to rewrite a Master File in the file in which it was originally written.

After the Master File has been written, the TDP initialization is checked against the Master File initialization. If the mission numbers disagree, the program will abort. This check is performed only in the file for which the TDP is initialized; therefore, if the other file is initialized by this option, it will be ignored. When the TDP aborts, the comment

MISSION ON TAPE IS XX, NOT YY, AS REQUESTED

will be printed.

If a legitimate Master File is not mounted on SYSUT2, the comment

SYSUT2 NOT A MASTER FILE

will be printed and the program aborts.

If all tests are satisfied, the new Master File summaries are printed.

4.0 OPERATION OF THE TDP IN LINK 2

When entry to TDPLK2 has been made from TDPLK1, final procedures are performed to initialize TDPLK2. When the program is being cycled through TDPLK2, these operations are suppressed in order to expedite automatic running.

At this point in the operation of the program, the year is determined from the epoch read in Link 1. Input tracking messages contain only hours, minutes, seconds, and day of year; therefore, the TDP must assign the year. This year assignment may be altered by control card input; this option is discussed in Paragraph 4.2.5.

4.1 Data Input to the TDP

Tracking data input may be in Baudot from the Editor, or BCD from card images. The TDP has a built-in Baudot-to-BCD conversion routine (see Appendix C). This routine converts the Baudot message to an equivalent BCD card image in core. BCD messages read into the TDP are left adjusted so that the first character is a nonblank character; further processing can thus be done independently of the data source. It is important to note that this shift may result in the column number being different in core from that on the tracking cards. Therefore, all references to column numbers on control cards should be made relative to the first nonblank character on the card.

4.1.1 TDP Data Rejection

The TDP rejects data input for the following reasons:

1) When the Editor supplies data to the TDP, it prefixes the external Station ID. This ID is checked against the ID in the tracking message; if the IDs disagree, the message is rejected. Exceptions and override capabilities will be noted later. The comment associated with rejection for this reason is:

   PREAMBLE ID IS XX

2) When data is read from tape or cards, the TDP must find the Station ID in the data message. If it cannot find the Station ID, the message is rejected. The comment will be:

   UNRECOGNIZABLE

   If preamble checking is suppressed and the TDP finds a

Station ID but cannot match it against the EXTERN table, the message is rejected. The comment will be:

ID OUTSIDE NORMAL RANGE

3) If there is a format error in the message, one of the following comments is printed

CHARACTER IN BLANK FIELD

BLANK IN DECIMAL FIELD

BLANK IN OCTAL FIELD

CHARACTER NOT DECIMAL

CHARACTER NOT OCTAL

and the message is rejected.

4) If the S/C ID in the message is not the same as the S/C ID read on the FILE card, the message is rejected. The comment will be:

NOT CURRENT MISSION.

5) If the time of the message (not 7040 receipt time) is before the EPOCH of the Master File, the message is rejected. The comment will be:

TIME BEFORE INJECTION

6) If one of the data types falls outside the normal range of that data type, the message is rejected. The comment will be:

XXX OUTSIDE NORMAL RANGE

XXX may be R, AZ, EL, HA, DEC, DP, RU,

DC1, DC2, DC3, DC4, DC5, DC6, DC7, DAY, HR,

MIN, SEC.

All rejected data is punched out on cards. If desired, these cards may be read back into the TDP with additional control cards necessary for the TDP to accept the data. Data acceptable to the TDP is sorted by time and station and added to the Master File. In the event a point is retransmitted for any reason, the new point will replace the old point on the Master File.

The TDP normally rejects non-time-sequential data by station in 300-point batches. If two points having the same associated time are received for the same station, one point will be rejected if the messages are identical, and both points will be rejected if the messages are not identical. A control card may be used to accept non-time-sequential data.

4.1.2 Tracking Formats - DSIF

Tracking data from the Deep Space Instrumentation Facility (DSIF) stations may be in several different formats (although only one of two per station for any particular mission). These formats are:

FORMAT NUMBER 1 (L-BAND)

Column	Information
1-2	Station ID
3	Blank
4-5	Format ID (01)
6	Blank
7-8	S/C ID (DC4)
9	Blank
10	DC1
11	DC2
12	DC3
13	DC5
14	Blank
15-16	Hours
17-18	Minutes
19-20	Seconds
21	Blank
22-24	Day of year
25	Blank
26-35	Doppler count
36	Blank
37-42	Hour Angle x 10^3
43	Blank
44-49	Declination x 10^3

FORMAT NUMBER 2 (S-BAND)

Column	Information
1-2	Station ID
3	Blank

Column	Information
4-5	Format ID (02)
6	Blank
7-8	S/C ID (DC-4)
9	Blank
10	DC1
11	DC2
12	DC3
13	DC5
14	Blank
15-16	Hours
17-18	Minutes
19-20	Seconds
21	Blank
22-24	Day of year
25	Blank
26-35	Doppler count
36	Blank
37-46	Range units
47	Range DCC (DC6)
48	Blank
49-54	Hour Angle x 10^3
55	Blank
56-61	Declination x 10^3

FORMAT NUMBER 3 (S-BAND)

Column	Information
1-2	Station ID
3	Blank
4-5	Format ID (03)
6	Blank
7-8	S/C ID (DC4)

Column	Information
9	Blank
10	DC1
11	DC2
12	DC3
13	DC5
14	Blank
15-16	Hours
17-18	Minutes
19-20	Seconds
21	Blank
22-24	Day of year
25	Blank
26-35	Doppler Count
36	Blank
37-46	Range units
47	Range DCC (DC6)

FORMAT NUMBER 4 (L/S-BAND)

Column	Information
1-2	Station ID
3	Blank
4-5	Format ID (04)
6	Blank
7-8	S/C ID
9	Blank
10	DC1
11	DC2
12	DC3
13	DC5
14	Blank

Column	Information
15-16	Hours
17-18	Minutes
19-20	Seconds
21	Blank
22-24	Day of year
25	Blank
26-35	Doppler count
36	Blank
37-41	C2 frequency
42	Blank
43-48	Hour Angle x 10^3
49	Blank
50-55	Declination x 10^3

FORMAT NUMBER 5 (L/S-BAND)

Column	Information
1-2	Station ID
3	Blank
4-5	Format ID (05)
6	Blank
7-8	S/C ID (DC4)
9	Blank
10	DC1
11	DC2
12	DC3
13	DC5
14	Blank
15-16	Hours
17-18	Minutes
19-20	Seconds
21	Blank

Column	Information
22-24	Day of year
25	Blank
26-35	Doppler count
36	Blank
37-41	C2 frequency

All fields must be numeric. No blanks are allowed within any data field, except that the C2 and ranging (RU) fields may be omitted.

4.1.2.1 Data Condition Codes

Five fields in the tracking message define the data quality and ground mode. Two additional fields are also defined in this group.

4.1.2.1.1 DC1

DC1 indicates whether cumulative doppler (CCD) or destructive count doppler (DD) is present in the message and, in the case of DD, the averaging time. The following codes are established for DC1:

DC1	Meaning
0	DD counted for 1 second
1	DD counted for 5 seconds
2	DD counted for 10 seconds
3	DD counted for 20 seconds
4	DD counted for 30 seconds
5	DD counted for 40 seconds
6	DD counted for 50 seconds
7	DD counted for 60 seconds
8	CCD

4.1.2.1.2 DC2

DC2 indicates the quality of the data sample.

DC2	Meaning
0	Good data, in RF lock, in auto track
1	Good data, in RF lock, in aided track
2	Good data, not in RF lock, in auto track

DC2	Meaning
3	Good data, not in RF lock, in aided track
4	Bad data, in RF lock, in auto track
5	Bad data, in RF lock, in aided track
6	Bad data, not in RF lock, in auto track
7	Bad data, not in RF lock, in aided track

The qualifications "good" and "bad" reflect a decision by the DSIF station.

The TDP will reject any data with DC1 = 8 and DC2 $\neq$ 0, 1 and will reject any data with DC1 $\neq$ 8 and DC2 $\neq$ 0, 1, 4, or 5.

4.1.2.1.3 DC3

DC3 indicates the doppler ground mode.

DC3	Meaning
0	Two-way, one station, coherent
1	One-way
2	Two-way, two station, noncoherent
3	Two-way, two station, coherent
4-7	Same as 0-3 except that alternate counter is being used

DC3 does not altogether reflect tracking data from L/S stations, but is more or less accurate.

4.1.2.1.4 DC5

DC5 is used to define the status of the atomic frequency standard at the station.

DC5	Meaning
0	In lock (good data)
1	Out of lock (bad data)
2	DC5 not applicable

4.1.2.1.5 DC6

DC6 defines the quality of the ranging data: DC6 = 0 indicates good data, DC6 $\neq$ 0 is bad data, DC6 = 9 means frequency in ranging field.

4.1.2.1.6 DC4 and DC7

The S/C ID is defined in the TDP as DC4 and the Format ID is defined as DC7.

4.1.2.2 Angles

The angles are in units of degrees x 10^3.

4.1.2.3 Doppler

Doppler is in units of counts per count internal or, in the case of CCD, total counts since the last counter reset.

4.1.2.4 Range

Ranging is in units of time. $1RU = \frac{1}{16}\left(\frac{240}{221}\right)\frac{1}{96 \times f_q}$ seconds.

f_q = transmitter VCO frequency. The TDP does not do Range Unit conversions.

4.1.2.5 Time

Time is in GMT in hours, minutes, seconds, and day of year.

4.1.2.6 Station ID

The Station ID is a 2-digit identifier. The equivalences listed below are nominal in the TDP.

Station (External)		Station (TDP)
59	Mobile Tracking Station	1
11	Goldstone Pioneer	2
42	Canberra	3
41	DSIF Woomera	4
51	DSIF Johannesburg	6
61	DSIF Madrid	13
12	Goldstone Echo	No Nominal
13	Goldstone Venus	No Nominal

These equivalences may be changed or new ones defined in the TDP source deck (see Appendix A).

4.1.3 Tracking Formats - ETR

Tracking data received from the Air Force Eastern Test Range (AFETR or ETR) tracking stations is nominally in a single format,

though the data units in each field may vary from station to station.

ETR FORMAT

Column	Information
1	Data type
2-3	Station ID
4	Radar type
5	On-Track code (DC2)
6-7	Hours
8-9	Minutes
10-11	Seconds
12-18	Azimuth
19-25	Elevation
26-34	Range

All fields are numeric; no blanks are allowed within any field.

4.1.3.1 Data Type

The data type may be:

Value	Meaning
2	Real data
3	Simulated data
7	Last data print

The TDP ignores the data type field.

4.1.3.2 Station ID

The Station ID is a 2-digit identifier. The following stations are nominally defined:

Station (External)		Station (TDP)
91	Antigua	6
75	Ascension	7
77	Ship	8
76	Pretoria	9

In addition, Carnarvon (08) and Bermuda (02) are considered as 10 and 11 in the TDP if the IDs are inserted via control cards or source deck since the formats and data time assignments in the TDP are nominal for these stations (see Appendix A).

4.1.3.3 Radar Type

This code may be 0 or 3, depending on the type of radar that is tracking. Since ETR is unpredictable in the assignment of this code, it is ignored in the TDP.

4.1.3.4 On-Track Code (DC2)

This is a true data condition code. The TDP recognizes a value of DC2=2 as good (on-track) data and all other values as out-of-lock (off track) data. The Class Table (Appendix A) may be used in the TDP to discriminate with DC2 by the assignment of a zero decrement for the desired station. If the Class Table entry has a nonzero decrement, DC2 will be ignored. Further action is also required in the ODG to ignore the DC2 test.

4.1.3.5 Time

Time is in GMT, in decimal hours, minutes, and seconds. No day appears in the message; a control card is required to provide one.

4.1.3.6 Angles

Angles are in octal, in units of fractional circles times a multiplier that varies for different radars. The nominal conversions to degrees for the various stations are:

Station	Angle Conversion
91	$360/2^{19}$
75	$360/2^{17}$
77	$360/2^{17}$
76	$360/2^{17}$
8	$360/2^{20}$
2	$360/2^{17}$

4.1.3.7 Range

Range is in octal in some units of yards. The nominal conversions to kilometers for the various stations are:

Station	Range Conversion
91	1.953125 x YD=0.17859375E-2
75	YD

Station	Range Conversion
77	YD
76	YD
8	1.953125 x YD
2	1.953125 x YD

YD = 0.9144E-3

4.2 Control Card Input in Link 2

Control card input to the TDP provides a highly flexible means of communicating information about data formats and data selection, and allows a number of data alteration capabilities. A listing of allowable control cards is included in this guide as Appendix D. The use of these control cards is discussed in the following sections. During early phases of a mission, little or no control card input is required; most control cards are saved by the program and need be entered only once. The reading of control cards may be suppressed, if not required, by entering Option Switch 1 before the card reader is selected.

4.2.1 General Requirements

All control cards are identified by a control word starting in Column 1. A control word must appear in Column 1, and the next item on the card must not begin before Column 7. Thus there is no spacing requirement after 6 letter control words. Only the STOP control card in the TDP has fewer than six characters; therefore, it must be followed by two spaces. Numeric fields must be terminated by blanks or commas. Otherwise, the control format is independent of spacing and requires only that all information necessary be included on a single card. No provision is made for the continuation of a control message on a second card.

4.2.2 FORMAT and ASSIGN Cards

If tracking data enters the TDP in a format different from the nominal formats stored in the program, or if the fields contain information different from that stored in the ASSIGN tables, it will be necessary to insert appropriate FORMAT or ASSIGN cards, or both. The nominal FORMAT and ASSIGN cards are listed in Appendix B. The FORMAT card resembles a FORTRAN format statement and is modeled on the FORTRAN design. The allowable conversions are:

Symbol	Meaning
B	Field must be blank. Example: 5B = 5 blank columns.

Symbol	Meaning
X	Ignore entire field. Example: 5X = ignore 5 columns.
F	Decimal to floating point. Decimal point may be present or assumed. If the decimal point is present, it must be included in the count of field size. Example: F6.2 = six characters in the field; decimal point two places from the right. Leading blanks are allowed in the F conversion.
G	Same as F, but leading blanks are not allowed.
K	Decimal to full word binary integer. Leading blanks are allowed. Example: K3 = three-digit decimal field.
L	Same as K, but leading blanks are not allowed.
O	Octal to full-word binary integer. Leading blanks are allowed. Example: 07 = 7 octal digit octal field.
Q	Same as O, but leading blanks are not allowed.
S	Octal integer to floating point binary. No scale factor is allowed. Leading blanks are allowed. Field must not be longer than 9 octal digits.
T	Same as S, but leading blanks are not allowed.

Fields may be repeated by prefixing the number of identical fields. For example, 5L1 means that five 1-digit decimal fields are present. L5 would denote one 5-digit decimal field. If it is desired to repeat multiple fields, parentheses may be used; for example, 2 (1B, G6.3) is the same as 1B, G6.3, 1B, G6.3. Commas are used to separate adjacent fields; blanks are ignored. The entire format must be surrounded by parentheses. The nominal FORMAT and ASSIGN cards are listed in Appendix B as they would be punched on control cards.

It is not necessary to include the Station ID in the format; it may be ignored with an X field. If this is done, the ASSIGN card must not include the ID. It may be necessary to ignore the ID if the ASSIGN field is too long to fit on one control card. It is not necessary to include the ID because the external/internal station translation is made before the card is converted with the FORMAT/ASSIGN cards.

The ASSIGN card is used to identify the contents of the fields defined on the FORMAT card. The allowable ASSIGN types are:

Symbol	Data Type
R	Range
RDOT	Range Rate
AZ	Azimuth
EL	Elevation
HA	Hour Angle
DEC	Declination
DP	Doppler
C2	C2 frequency (for L/S stations)
RU	Range Units
ID	External Station ID
HR	Hour
MIN	Minutes
SEC	Seconds
DAY	Day of year
DC1	Data Condition Code No. 1
DC2	Data Condition Code No. 2
DC3	Data Condition Code No. 3
DC4	S/C ID
DC5	Data Condition Code No. 5
DC6	Range Data Condition Code
DC7	Format ID

The data types above must, in general, be associated with the FORMAT conversions shown below.

Symbol	Conversion
R	F, G, K, L, O, S, T
RDOT	F, G, S, T
AZ	F, G
EL	F, G
HA	F, G
DEC	F, G
DP	K, L, O, Q
HR	K, L, O, Q
MIN	K, L, O, Q
SEC	F, G, K, L, O, Q, S, T
DAY	K, L, O, Q
DC1	K, L, O, Q
DC2	K, L, O, Q
DC3	K, L, O, Q
DC4	K, L, O, Q
DC5	K, L, O, Q
DC6	K, L, O, Q
DC7	K, L, O, Q

It is possible to correct some observables for units not standard in the ODP. This is done by modifying the ASSIGN statement with special conversions in parentheses, e.g., R (YD). The list of special ASSIGN conversions immediately following shows the available conversions and accompanying FORMAT card restrictions.

Observable	Symbol	Input Units	Format Restriction
R	AMRRNG	Yards	K, L, O, Q
	ASCR	Yards	K, L, O, Q
	GUAR	1.952125 yards	K, L, O, Q
	VENUS	km -6100 km	F, G, S, T
	MI	Statute miles	F, G, S, T
	MT	Meters	F, G, S, T
	NAUT	Nautical miles	F, G, S, T

Observable	Symbol	Input Units	Format Restriction
	YD	Yards	F, G, S, T
	FT	Feet	F, G, S, T
RDOT	MI	Statute miles/sec	F, G, S, T
	MT	Meters/sec	F, G, S, T
	NAUT	Nautical miles/sec	F, G, S, T
	YD	Yards/sec	F, G, S, T
	FT	Feet/sec	F, G, S, T
ANGLES	CAP15	*F x 2^{15}	K, L, O, Q
	CAP16	F x 2^{16}	K, L, O, Q
	ANTA	F x 2^{16}	K, L, O, Q
	CAP17	F x 2^{17}	K, L, O, Q
	ASCA	F x 2^{17}	K, L, O, Q
	CAP18	F x 2^{18}	K, L, O, Q
	CAP19	F x 2^{19}	K, L, O, Q
	AMRANG	F x 2^{19}	K, L, O, Q
	CAP20	F x 2^{20}	K, L, O, Q
	CARN	F x 2^{14} x 100	K, L, O, Q
	FRAC	Fraction of a circle	F, G, S, T
	RA	Radians	F, G, S, T
	DM	Degrees and minutes	F, G, S, T

* F = Fraction of a circle

Other simple multiplicative conversions may be made by using the multiplying factor itself as a special conversion; e.g., R (.001) will convert from meters to kilometers. The numerical assignment may be performed only if the associated format conversion was F, G, S, or T. A maximum of 100 unique numerical conversions may be read while the program is running in a saved condition. It this limit is exceeded, the program will print a message on the administrative printer and allow the user to abort the program and begin anew. This is an unlikely occurrence.

4.2.3 REJECT Cards

The REJECT control cards may be used to prevent unwanted data from reaching the Master File. The format is:

REJECT STATION I, J

REJECT BEFORE HHMMSS, DAY, YR, STATION I

REJECT AFTER HHMMSS, DAY, YR, STATION I

REJECT FROM HHMMSS, DAY, YR, TO HHMMSS, DAY, YR, STATION I

REJECT AT HHMMSS, DAY, YR, STATION I

Any number of stations may be named on a single REJECT card. This card causes data in its range to be rejected by data range. Because the REJECT card causes data to be removed from the system, it should be used with caution even though rejected data is punched on cards and may be recovered later.

4.2.4 DELETE Cards

DELETE cards may be used to remove unwanted data from the Master File. The format is:

DELETE STATION I, J

DELETE BEFORE HHMMSS, DAY, YR, STATION I

DELETE AFTER HHMMSS, DAY, YR, STATION I

DELETE FROM HHMMSS, DAY, YR, TO HHMMSS, DAY, YR, STATION I

DELETE AT HHMMSS, DAY, YR, STATION I

The DELETE cards do not work at present; caution should be exercised here.

4.2.5 CHANGE Cards

CHANGE is an identifier for a group of control cards that perform miscellaneous functions. Formats and explanations follow.

CHANGE CURRENT YEAR 67

This card should be used if the data to be processed is assigned a year different from that of the EPOCH recorded on the Master File. Since the year is recorded on disc, it is not necessary to read this card repeatedly.

NOTE: The year will be changed on disc only if some data is added to the Master File during the current pass.

CHANGE DAY RESET 247

This card is used to supply a day of year for ETR data. The day will not be reset if it has been read in the tracking message. If desired, the day in the message may be deleted. This may be accomplished only by changing both the ASSIGN and FORMAT cards for the applicable station.

CHANGE DC1 RESET X STATION J
CHANGE DC2 RESET X STATION J
CHANGE DC3 RESET X STATION J
CHANGE DC4 RESET X STATION J
CHANGE DC5 RESET X STATION J

These cards will change the value of the appropriate data condition code to X for Station J. Any number of stations may be specified. X may not exceed 9. DC6 and DC7 may not be reset. The resets must be used with caution.

CHANGE RANGE RECYCLE 2204000

This card is discussed in Appendix B.

CHANGE TIME SORT

Input data out of time sort by station is normally rejected. This card will allow such data to be sorted and put in the Master File. The card will remain in effect while the program is in a saved condition. Use this card with discretion. If it is desired to revert to normal processing on a later run, use the following control card:

CHANGE NO SORT

It is not possible to change modes in the middle of a run.

CHANGE L BAND STATION I
CHANGE S BAND STATION I
CHANGE LS BAND STATION I
CHANGE L BAND NUMBER I
CHANGE S BAND NUMBER I
CHANGE LS BAND NUMBER I

If Format ID (DC7) is one of the data types in a tracking message,

the program will use the appropriate NUMBER format. Associated with each format number is a band designation as follows:

Number	Designation
1	L-Band
2	S-Band
3	S-Band
4	L/S-Band
5	L/S-Band

If it is desired to change one or more of these designations, appropriate BAND cards should be used.

If Format ID (DC7) is not a data type, the program will use the appropriate format by STATION. All STATION formats are assumed to belong to S-band stations by definition; in those instances where this is not the case, the band designation should be changed with the appropriate BAND card and station.

CHANGE CHECK J NUMBER I

The method used to locate Format ID in the tracking message is to scan the first few items in the message (nominally 3) for the Format ID. If a matching number cannot be found, the program will use the STATION formats. If it is desired to force reference to the STATION formats, use J = O for all numbers. The logic used is rather unwieldy and in need of improvement since other fields on the message could be mistaken for a Format ID.

CHANGE NO PREAMBLE CHECK

CHANGE PREAMBLE CHECK

The 7094 Editor sends data to the TDP tagged with the Station ID that was transmitted in the preamble. The format of the tracking message as transmitted by the Editor to the TDP is as follows:

Word 1	Time of Receipt by 7040
Word 2	D = Station ID
Word 3-13	Tracking message with CR, LF, Figs. removed. The message cannot be longer than 66 characters; if longer, the Editor truncates the message and discards the remainder.

The TDP normally performs a check (PREAMBLE CHECK) which requires that the Station ID in the second word of the message be the same as the Station ID in the actual tracking message. Since ETR data is never tagged with the actual Station ID, this check is only performed on DSIF data. This test may be suppressed with the first control card above; it may be restored on a later run with the second card.

CHANGE SELECT DISC
CHANGE SELECT DISK
CHANGE NO DISC SELECT
CHANGE NO DISK SELECT

In Mode II, the TDP selects one of the tracking buffers on the disc for its input unless the NO DISC SELECT control card is read. In Mode IV, the TDP will not select the disc unless it is requested to do so. If data from cards or a BCD input tape is read on a particular run, the disc select should be suppressed, and restored on the next run. It is not absolutely necessary to do this unless overlapping time periods are involved. The sequence of data selects is as follows for Modes II-IV:

Read Priority for Raw Data

MODE II	MODE IV
1. CARDS	1. CARDS
2. DISC	2. BCD TAPE*
	3. DISC*

*IF CONTROL CARD IS READ

After data has been read, it is treated as though it were from a single source so that the time sort may reject some of it. Use care in setting up the run.

CHANGE READ MORE CARDS
STOP

If data cards are to be read in through the card reader, they must be separated from control cards by a STOP control card. If the first card appears in the control cards, the data may follow immediately. This card may be eliminated by placing a non-functional card (subject, in MODE II, to having a C in Column 80) behind the STOP card.

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CHANGE NO PACK

CHANGE PACK

To suppress unpacking of the acceptable data on the 3070 or on-line printer, use the NO PACK card. This card will then remain in effect until a PACK card is read on a later run. Off-line output is not affected. This card may be simulated by entering Option Switch 20 before the unpacking begins.

CHANGE NO LIST

CHANGE LIST

To delete on-line printing and off-line printing and punching of data rejected because of data range, use the NO LIST card. It may be restored later with the LIST card.

REMOVE REJECTS STATION I

REMOVE DCX RESET STATION I

X may be 1, 2, 3, 4, 5. If resets or rejects are no longer required they may be removed by means of the appropriate control cards. Action of these cards is unreliable at present, and their use should be avoided. Abort the program to remove resets or rejects.

CHANGE ID COLUMN K STATION I

CHANGE ID COLUMN IGNORE LEADING COLUMNS K STATION I

CHANGE EXTERNAL NN STATION I

K may be 1-72; NN may be 1-99. These cards are used to change the external-internal station equivalences temporarily. If the ID is not the first item on the card, IGNORE LEADING COLUMNS must be specified. Nominal equivalences and ID columns are shown in Appendix A. Columns should be counted from the first nonblank column.

4.2.6 Comment Cards

For convenience in labeling output, a Comment card has been introduced. Any card with an asterisk (*) in Column 1 will be treated as a comment card. This card will be printed (without the asterisk) on the administrative printer and off-line.

At the present time, the TDP will reject any card which is not punched in Column 1 and which is read in before a STOP card as being unrecognizable. Therefore, such cards may also be used as comment cards. Since the official comment card will not change the input card count, it is a more desirable means of commenting.

4.2.7 Control Card Error Returns

Since no one is perfect (mutatis mutandis), the time might arise when the user makes an input error. Most errors will be caught by the program; however, inputs should be checked before being read in.

When an error is encountered in a control card, the program prints the following comment on the administrative printer:

TDP***THE FOLLOWING CONTROL CARD HAS AN ERROR STARTING IN COLUMN XX

The column number (XX) refers to the start of the field in which the error was found. The control card in error is then printed. Following this print is the suggestion:

READY A REPLACEMENT IN READER. END DATA REJECTS

(In Link 1, the entire deck should be reread, but Link 1 is a different breed of herring.)

ENTER SWITCHES. 32 CALLS FINSYS, 33 ABORTS. OTHERWISE, PROGRAM CONTINUES

The program will then pause and await appropriate option switch entry. If the control card is corrected, place it in the reader (followed by an END DATA card and a blank card in Mode II). When any option switch entry other than 32 or 33 is made, the card reader will be selected and the corrected card read. No additional cards may be read at this time; the TDP will ignore all control cards read except the first one (and the END DATA card in Mode II). In either Mode II or Mode IV, an END DATA card alone will cause the program to continue without replacement of the bad control card.

5.0 TDP PROGRAM ERROR RETURNS

All error conditions in the TDP are accompanied by administrative printer comments. These comments are reasonably explicit, but sometimes carry a meaning other than the apparent one. The following comments are "standard" error messages.

TDP***DISC TRANSMISSION ERRORS HAVE OCCURRED.

This is a general comment that may indicate an actual disc failure but usually implies a program dysfunction. This comment, however, is not likely to occur. The cognizant programmer should be called.

TDP***A NON-EXISTENT STATION HAS BEEN REQUESTED.

Program dysfunction; not likely to be a true statement.

TDP***ERROR HAS OCCURRED ON THE REMAK (IO) SCRATCH TAPE.

The Master File save tape (B1) has developed a bad spot between writing and reading. This probably results in the loss of the Master File. Call the programmer for a prognosis.

TDP***THE SCROD FILE IS TOO SMALL. RESTART THE PROGRAM WITH LARGER FILE BOUNDS.

This remark is misleading, since the size of the SCROD file cannot be changed easily. In any event, the Master File cannot be updated with any more data; a new one must be started. The SCROD file contains 1000 disc records and can hold 15, 384 points. It will not overflow unless tracking data is retransmitted and the required station file contains more than 15, 384 points.

TDP***THE MASTER FILES ARE SATURATED. NO MORE RAW DATA CAN BE ACCEPTED UNLESS SOME OF THE DATA NOW IN THE MASTER FILES ARE DELETED.

Each Master File can hold up to 46, 152 points from all stations combined. If this limit is exceeded, a new File must be started or some data must be deleted.

TDP***MASTER FILES REQUESTED ON DISC DO NOT EXIST.

This comment, followed by an abort indication, can only arise if the Master File is destroyed while the TDP is cycling through Link 2.

TDP***STATION NUMBER UNACCEPTABLE FOR XR1

Program dysfunction or computer failure.

In general, any disastrous error condition will result in the comments:

IMPOSSIBLE SITUATION HAS ARISEN. PROBABLE MACHINE
FAILURE NEAR LOCATION (XXXXX) OCTAL
ENDSYS HAS BEEN CALLED.

When this occurs, the reason for termination should be rationalized before the program is restarted.

APPENDIX A

SYMBOLS ALLOWED IN THE TDP SOURCE DECK

A.1. TDPLK1

FILE1: The Master File to be used is the first file, S/C ID is the data item, viz.,

FILE1 = 42

FILE2: The Master File to be used is the second file, S/C ID is the data item, viz.,

FILE2 = 56

MISS1: Synonym for FILE1

MISS2: Synonym for FILE2

MARNO: Synonym for FILE1

SURNO: Synonym for FILE2

Restrictions: Only one file may be referenced; S/C ID < 1000

MICODE: The BCD label for the Master File and prints; a maximum of six characters may be used.

A.2. TDPLK2

In the following list, B refers to BCD, O to octal, and D to decimal information.

LABEL = B
FINISH = O
EXTERN = O
ICLASS = O
PRECHK = D
NORMIN = O
ARGH = D
ASN1 = O
ASN2 = O
ASN3 = O
ASN4 = O
ASN5 = O

```
ASN6    = O
ASN7    = O
ASN8    = O
ASN9    = O
ASN10   = O
ASN11   = O
ASN12   = O
ASN13   = O
ASN14   = O
ASN15   = O
BSN1    = O
BSN2    = O
BSN3    = O
BSN4    = O
BSN5    = O
BSN6    = O
BSN7    = O
BSN8    = O
BSN9    = O
BSN10   = O
BSN11   = O
BSN12   = O
BSN13   = O
BSN14   = O
BSN15   = O
MAT1    = B
MAT2    = B
MAT3    = B
MAT4    = B
MAT5    = B
MAT6    = B
MAT7    = B
MAT8    = B
MAT9    = B
```

MAT10 = B.
MAT11 = B
MAT12 = B
MAT13 = B
MAT14 = B
MAT15 = B
BAT1 = B
BAT2 = B
BAT3 = B
BAT4 = B
BAT5 = B
BAT6 = B
BAT7 = B
BAT8 = B
BAT9 = B
BAT10 = B
BAT11 = B
BAT12 = B
BAT13 = B
BAT14 = B
BAT15 = B

A.2.1. Explanation of Symbols

LABEL: Up to six BCD characters. A Master File label (MICODE) may be changed permanently by the use of this option.

FINISH: This location is the address of the first word of the TDP subroutine that calls FINSYS.

EXTERN: This references the end of a 15-word table that defines external vs internal Station IDs and ID columns. If a semipermanent change of one of the entries is desired, it may be accomplished in the source deck.

EXTERN-I = X YYYYYZWWWWW/8

where:

I = Internal Station ID

X = 4 if ID is not the first nonblank item in the image
= 0 if ID is the first nonblank item in the image

YYYYY = the number of the column (in octal) in which the first nonzero character of the Station ID appears

Z = 0

WWWWW = External Station ID (in octal)

ICLASS: This references the end of a 15-word table that defines whether a particular station is a DSIF, ETR, or other station. ICLASS -J = 0 if Station J (internal) is a DSIF station.

ICLASS - J = PDDDDDTAAAAA/8

where:

J = Internal Station ID

P = 4 if station is RA-DEC
= 0 if station is AZ-EL or HA-DEC

DDDDD = 0 if station has a DC2 assigned

DDDDD ≠ 0 if station needs no DC2

T = 0 if DSIF

T ≠ 0 if ETR

AAAAA = 0

PRECHK ≠ 0 if preamble checking (image vs preamble ID) is not desired. This checking is normally done for DSIF stations but not for ETR stations.

NORMIN: Normal indicator settings (read in octal).

ARGH: Defines number of successive all-zero lines of data that may be read before the program alarms.

ASN (I), BSN (I), MAT (I), BAT (I): Locations of format and assign statements assembled into the program. These may be read into the program only in special circumstances. It is probably better not to try without help.

A.2.2. Nominal Values

LABEL: None

EXTERN:

INTERNAL	EXTERNAL	ID COLUMN	IGNORE LEADING COLUMNS
1	59	1	NO
2	11	1	NO
3	42	1	NO
4	41	1	NO
5	51	1	NO
6	91	2	YES
7	75	2	YES
8	77	2	YES
9	76	2	YES
10	72	2	YES
11	22 (BERMUDA)	2	YES
12	88 (NONE)	50	NO
13	61 (MADRID)	1	NO
14	99 (RA-DEC)	1	NO
15	88 (NONE)	50	NO

ICLASS:

STATION	CLASS
1	DSIF
2	DSIF
3	DSIF
4	DSIF
5	DSIF
6	ETR
7	ETR
8	ETR (NO DC2)
9	ETR

STATION	CLASS
10	ETR
11	ETR
12	DSIF
13	DSIF
14	RA-DEC
15	DSIF

PRECHK = 0

NORMIN = 020400000000/8

ARGH = 10

ASSIGN, FORMAT: As defined in Appendix B.

APPENDIX B

TDP NOMINAL VALUES

B.1. NOMINAL FORMATS

B.1.1. Formats by Format ID

FORMAT (3(L2, 1B), 4L1, 1B, 3L2, 1B, L3, 1B, L10, 2(1B, F6.3))NUMBER 1

FORMAT (3(L2, 1B), 4L1, 1B, 3L2, 1B, L3, 1B, L10, 1B, K10, K1, 2(1B, F6.3)) NUMBER 2

FORMAT (3(L2, 1B), 4L1, 1B, 3L2, 1B, L3, 1B, L10, 1B, K10, K1) NUMBER 3

FORMAT (3(L2, 1B), 4L1, 1B, 3L2, 1B, L3, 1B, L10, 1B, K5, 2(1B, F6.3)) NUMBER 4

FORMAT (3(L2, 1B), 4L1, 1B, 3L2, 1B, L3, 1B, L10, 1B, K5) NUMBER 5

Numbers 6 through 15 have no nominal FORMATS.

The word NUMBER indicates that the program is to use the Format ID to identify the data format.

B.1.2. Formats by Station ID

FORMAT (3X, L2, 1B, 2Q1, 1B, 3L2, 1B, 2(G6.3, 1B), L8, 1B, L3) STATION 1

FORMAT (3X, L2, 1B, L1, 3Q1, 1B, 3L2, 2(1B, G6.3), 1B, L10, 1B, L3) STATION 2

FORMAT (3X, L2, 1B, L1, 3Q1, 1B, 3L2, 2(1B, G6.3), 1B, L10, 1B, L3) STATION 3

FORMAT (3X, L2, 1B, L1, 3Q1, 1B, 3L2, 2(1B, G6.3), 1B, L10, 1B, L3) STATION 4

FORMAT (3X, L2, 1B, L1, 3Q1, 1B, 3L2, 2(1B, G6.3), 1B, L10, 1B, L3) STATION 5

FORMAT (4X, L1, 3L2, 2Q7, Q9) STATION 6

FORMAT (4X, L1, 3L2, 2Q7, Q9) STATION 7

FORMAT (4X, L1, 3L2, 2Q7, Q9) STATION 8

FORMAT (4X, L1, 3L2, 2Q7, Q9) STATION 9

FORMAT (4X, L1, 3L2, 2Q7, Q9) STATION 10

FORMAT (4X, L1, 3L2, 2Q7, Q9) STATION 11

Stations 12 through 15 have no nominal FORMATS.

The word STATION indicates that the program is to use the station to identify the data format.

B.2. NOMINAL ASSIGNS

B.2.1. Assigns by Format ID

ASSIGN (ID, DC7, DC4, DC1, DC2, DC3, DC5, HR, MIN, SEC, DAY, DP, HA, DEC)
NUMBER 1

ASSIGN (ID, DC7, DC4, DC1, DC2, DC3, DC5, HR, MIN, SEC, DAY, DP, RU, DC6, HA, DEC)
NUMBER 2

ASSIGN (ID, DC7, DC4, DC1, DC2, DC3, DC5, HR, MIN, SEC, DAY, DP, RU, DC6)
NUMBER 3

ASSIGN (ID, DC7, DC4, DC1, DC2, DC3, DC5, HR, MIN, SEC, DAY, DP, C2, HA, DEC)
NUMBER 4

ASSIGN (ID, DC7, DC4, DC1, DC2, DC3, DC5, HR, MIN, SEC, DAY, DP, C2)
NUMBER 5

Numbers 6 through 15 have no nominal ASSIGNS.

B.2.2. Assigns by Station ID

ASSIGN (DC4, DC2, DC3, HR, MIN, SEC, AZ, EL, DP, DAY) STATION 1
ASSIGN (DC4, DC1, DC2, DC3, DC5, HR, MIN, SEC, HA, DEC, DP, DAY) STATION 2
ASSIGN (DC4, DC1, DC2, DC3, DC5, HR, MIN, SEC, HA, DEC, DP, DAY) STATION 3
ASSIGN (DC4, DC1, DC2, DC3, DC5, HR, MIN, SEC, HA, DEC, DP, DAY) STATION 4
ASSIGN (DC4, DC1, DC2, DC3, DC5, HR, MIN, SEC, HA, DEC, DP, DAY) STATION 5
ASSIGN (DC2, HR, MIN, SEC, AZ(CAP19), EL(CAP19), R(GUAR)) STATION 6
ASSIGN (DC2, HR, MIN, SEC, AZ(CAP17), EL(CAP17), R(AMRRNG)) STATION 7
ASSIGN (DC2, HR, MIN, SEC, AZ(CAP17), EL(CAP17), R(AMRRNG)) STATION 8
ASSIGN (DC2, HR, MIN, SEC, AZ(CAP17), EL(CAP17), R(AMRRNG)) STATION 9
ASSIGN (DC2, HR, MIN, SEC, AZ(CAP20), EL(CAP20), R(GUAR)) STATION 10
ASSIGN (DC2, HR, MIN, SEC, AZ(CAP17), EL(CAP17), R(GUAR)) STATION 11

Stations 12 through 15 have no nominal ASSIGNS.

B.3. NOMINAL CONSTANTS

Kilometers/foot = FT = 0.3048E-3
Kilometers/yard = YD = 0.9144E-3
Kilometers/mile = MI = 1.609344
Kilometers/nautical mile (6080.0 feet) = NAUT = 1.853184
Degrees/radian = RA = 57.2957795
Radius of Venus = RVENUS = 6100.0

The above constants are availabe for use on ASSIGN cards if the item has been formatted with an F, G, S, or T conversion.

Range Recycle = 2,304,000 yards.

The Range Recycle is available for use with an ASCR conversion. The Recycle will be added to the range a number of times equal to the value of DC5. Thus, if the range for Station 9 is assigned as R(ASCR) and a

CHANGE DC5 RESET 1 STATION 9

card is used, 2,304,000 yards will be added to the range. The nominal value of the Recycle may be changed with a

CHANGE RANGE RECYCLE XXXXXXX

card, where XXXXXXX is the number of yards (up to 11 digits) in the Recycle.

B.4. NOMINAL BANDS BY FORMAT NUMBER

Format Number	Band
1	L-BAND
2	S-BAND
3	S-BAND
4	L/S-BAND
5	L/S-BAND

B.5. LIMITS ON MAGNITUDES OF ASSIGNED FIELDS

$0 \leq DC1 \leq 8$
$0 \leq DC2 \leq 7$
$0 \leq DC3 \leq 7$
$0 \leq DC4 \leq 99$ (S/C ID)
$0 \leq DC5 \leq 2$
$0 \leq DC6 \leq 9$ (RANGE DCC)
$0 \leq DC7 \leq 15$ (FORMAT ID)
$0 \leq HR \leq 23$
$0 \leq MIN \leq 59$
$0 \leq SEC \leq 59.999999$
$0 \leq DAY \leq 365 \leq$ (in Leap years, $\leq$ 366)

$10000 \leq DP \leq 9999999999$

$0 \leq EL \leq 89.999999$

$0 \leq HA \leq 359.99999$

$0 \leq DEC \leq 359.99999$

$0 \leq AZ \leq 359.99999$

NOTE: A further check on angle range is made in the ODG. All other assigned quantities are accepted as input; no input quantity may be negative, except RDOT.

B.6. OTHER NOMINAL VALUES

Other nominal values are noted in Appendix A.

APPENDIX C

BAUDOT TO BCD CONVERSION IN THE TDP

C.1. LTRS and FIGS, nonprinting Baudot characters in the tracking message, do not result in a space in the converted BCD message. The BCD message is built up using the following list:

	BAUDOT		BCD	
OCTAL	LETTERS	FIGURES	LETTERS	FIGURES
00	BLANK	BLANK	77	77
01	T	5	T	5
02	CR	CR	77	77
03	O	9	O	9
04	SPACE	SPACE	BLANK	BLANK
05	H	STOP	H	77
06	N	,	N	,
07	M	.	M	.
10	LF	LF	77	77
11	L	)	L	)
12	R	4	R	4
13	G	&	G	+
14	I	8	*	8
15	P	0	P	0
16	C	:	C	77
17	V	;	V	77
20	E	3	E	3
21	Z	"	Z	"
22	D	$	D	$
23	B	?	B	?
24	S	BELL	S	77
25	Y	6	Y	6
26	F	!	F	1
27	X	/	X	/

	BAUDOT		BCD	
OCTAL	LETTERS	FIGURES	LETTERS	FIGURES
30	A	-	A	-
31	W	2	W	2
32	J	'	J	'
33	FIGS	FIGS	FIGS	FIGS
34	U	7	U	7
35	Q	1	Q	1
36	K	(	K	(
37	LTRS	LTRS	LTRS	LTRS

Any character larger than $(37)_8$ will be replaced by a BCD $(77)_8$. In addition, the error comment

TDP***IMPOSSIBLE CHARACTER IN RAW BAUDOT INPUT

will be printed on the administrative printer. Note that in this table a Baudot exclamation mark (!) is interpreted as a numeric 1.

APPENDIX D

SAMPLE OF VALID TDP CONTROL CARDS

```
NOTES

1.THE YEAR FIELD MAY BE DROPPED IF IT IS THE SAME AS CURRENT YEAR
2.ANY NUMBER OF STATIONS MAY BE REFERENCED ON A SINGLE CONTROL CARD
3.CHANGE CARDS MAY BE STACKED ON ONE CARD IF THEY DO NOT
        CONTAIN THE WORD 'STATION' INTERNALLY.EXAMPLE-

CHANGE NOLIST NOPACK CURRENT YEAR 68 DC2 RESET 0 STATION 1

4.ALL CONTROL CARDS REMAIN IN EFFECT UNTIL THEY ARE REMOVED
        OR THE PROGRAM IS ABORTED.
5.DCX MAY BE DC1,DC2,DC3,DC4,DC5


CHANGE *******
CHANGE CURRENT YEAR 65
CHANGE DAY RESET 247
CHANGE NO LIST
CHANGE NO PACK
CHANGE LIST
CHANGE PACK
CHANGE READ MORE CARDS
CHANGE PREAMBLE CHECK
CHANGE NO PREAMBLE CHECK
CHANGE READ SYSUT4 FOR INPUT
CHANGE SELECT DISC
CHANGE SELECT DISK
CHANGE NO DISC SELECT
CHANGE NO DISK SELECT
CHANGE EXTERNAL 51 STATION 5
CHANGE ID COLUMN 1 STATION 5
CHANGE ID COLUMN IGNORE LEADING COLUMNS 2 STATION 6
CHANGE DCX RESET J STATION 1,2
CHANGE LBAND STATION 3
CHANGE SBAND STATION 2
CHANGE LSBAND STATIONS 4,5
CHANGE RANGE RECYCLE 2305000
CHANGE TIME SORT
CHANGE NO SORT


STOP


REJECT *******
REJECT STATION 6,7
REJECT BEFORE 221343,342,64 STATION 5
REJECT AFTER  030000,343, STATION 5
REJECT AT 223104,057,63, STATION 4
REJECT FROM 010000 53 61 TO 010000 71, STATION 2,3


DELETE *******
DELETE STATION 1
DELETE BEFORE  000000,001,65, STATION 5
DELETE AFTER   100000,010,65, STATION 1


DELETE AT 180002,157,64, STATION 3
DELETE FROM 180004,210, TO 180004,211,65 STATION 4
```

APPENDIX E

MASTER FILE AND GTBLE

E.1. GENERAL

There are two Master Files on disc, Master File 1 and Master File 2. Disc allocation is (relative to JPLTDP):

RECORDS 1 - 3000:	FILE1
RECORD 3001:	FILE1 STATION SUMMARIES
RECORD 3002:	FILE2 STATION SUMMARIES
RECORDS 3003 - 6002:	FILE2

E.1.1. File Summaries

The file summaries have the following form:

WORD	CONTENTS	
1-3	SSCODE:	3 BCD words serving as Master File identifier: TDP STAT SUMMARIES
4	MISSION:	Mission number in fixed point binary
5-6	CYSEC:	Number of seconds to January 1, current year from 1950.0 in double precision floating point
7	CURYR:	Current year in sexagesimal YY0100100
8	MICODE:	BCD identifier for particular Master File
9-10	LYSEC:	Number of seconds to injection epoch from 1950.0 in double-precision floating point
11-12	GMTLY:	Injection epoch in sexagesimal, stored backward YYMM0DDHH, NNSS000
13-132	STATA:	Station summaries and disc dictionary. Eight words per station for 15 stations, stored forward by station. For each station,

WORD		CONTENTS
0	Address =	First usable disc record
	Decrement =	Last usable disc record

WORD		CONTENTS
1	Address =	Last disc record actually used
	Decrement =	Next available word in last record used
2-3		DP last time for station
4-5		DP first time for station
6		Number of points in file for this station
7		Unused
133		Unused for Master File
134	MISUM-1:	Number of points replaced on file
135	MISUM:	Number of data points for all stations

E.2. MASTER FILE LOGICAL RECORD (GTBLE IN CORE)

Each Master File logical record is preceded by a single word with the number of words (12) remaining in the logical record in the decrement: The format is:

WORD		CONTENTS
-1	$D = (14)_8$	
0-1	DP seconds past injection epoch (floating point)	
2	A =	STATION (INTERNAL)
	T =	COUNTER NUMBER
	D =	0
	P =	DC3 (BITS S, 1, 2)
3	$S = \begin{cases} +: AZ, EL \\ -: HA, DEC \end{cases}$	BIT 1 = MANUAL DATA
		BIT 2 = BAD ANGLES
		BITS 3-6 = DC1
		BITS 7-9 = DC2
	A =	STATION (EXTERNAL)
4	EL (DEC)	FLOATING PT
5	AZ (HA)	FLOATING PT

WORD	CONTENTS	
6	DIVIDED DOPPLER OR $\dot{R}$	FLOATING PT
7	IF POSITIVE, RAW DOPPLER	FIXED PT
	IF NEGATIVE, RANGE	FLOATING PT
8	D = INPUT NUMBER	
	A = TAU (DOPPLER AVERAGING TIME)	
	T = DC5	
9	BITS 5-8 = FORMAT ID	
	BITS 9-11 = DC6 = RANGE DCC (MOD8)	
	BITS 16-17 = BAND DESIGNATION = 0 FOR L-BAND = 1 FOR S-BAND = 3 FOR L/S-BAND	
	BITS 18-35 = C2	
10	RANGE UNITS OR FREQUENCY, FIXED PT	
11	NOT USED	

APPENDIX F

PROGRAM OUTLINE AND FLOW

F.1. INTRODUCTION

This appendix provides a general description of program operation in terms of the printed output. It contains a description of the output of the program with an explanation of the various sections of the output. In the print descriptions, A=Ad printer, 0=3070, F=off-line 1401 print.

F.2. Print in Link 1

As each Link is entered, the program prints the time and date of the run and the computer on which the run was made. During real time operation, it is important to record the computer name, since the contents of the Master File may be different on each computer. Here, Computer B is 7094X and Computer G is 7094Y (A, F). The succeeding print is as follows:

1) The TDP notes that it is in recovery mode (A, F).

2) The Master File MICODE is printed (A, F). If CONTINUE is later specified, MICODE is retained from the File on disc and not overwritten with the source deck initialization.

3) The contents of the Master File on the selected File is printed (O, F).

4) Control cards are requested for final initialization (A, F).

5) The Master File disposition is printed (A, F).

6) If INITIALIZE is specified, the contents of the new Master File are printed (O, F).

7) If NEW EPOCH is specified, the EPOCH is printed.

8) The current S/C ID is printed (A, F).

F.3. Print in Link 2

A heading is printed (O, F). The contents of the current Master File are printed (O, F). A card read request is made (A, F) if Option Switch 1 was not entered. The following description applies to the accompanying print:

1) Three control cards are read (O, F). Note that Card No. 3 is a stacked CHANGE card.

2) MICODE is printed (A, F).

3) A listing is printed of the tracking messages in raw form, (O, F). If the message is acceptable, only CARD (No.) is printed. If the message is rejected, the reason for rejection and the time of receipt by the 7040 is printed. The message is also punched on a card. The print of a rejected message is preceded at the start of the message by leading asterisks to assist the user.

The comment

TDP***IMPOSSIBLE CHARACTER IN RAW BAUDOT INPUT

indicates that a character with an octal value $>37_8$ has been encountered. This comment is printed once for each occurrence. The acceptable data print may be deleted on-line if Option Switch 19 is entered.

After the input is complete, a summary of the input data is printed (O, F). This summary includes any control cards read. If more than 300 acceptable cards are entered, the program processes 300 at a time.

4) The acceptable data is printed in internal, converted form (O, F). In this case, the NOPACK card deleted the on-line print. The header symbols are:

ID:	Station ID (internal)
DCC:	Data condition codes 1, 2, 3
GMT, DAY:	Time on message (not 7040 time)
AZ/HA, EL/DEC:	Angle fields (defined on each line as to type)
DOPPLER:	Raw (undivided) doppler value
RANGE:	Either RU or FREQ for DSIF (in fixed point), or R for ETR (floating point)
DC6:	Range data condition code
FREQ:	C2 for L/S stations, missing for others
DAT:	Doppler averaging time (0 for CCD)
SECONDS:	Seconds elapsed since TDP EPOCH
DC5:	Data Condition Code 5
F/ID:	Format ID
CARD:	Message number from start of current 300-line input batch.

This print may be deleted on-line by entering Option Switch 20 before the UNPACK begins.

A summary of the input data by time and station is printed (O, F).

The updated Master File summary is printed (O, F). Here the ACCEPTED count is the total number of points on the File, and the REJECTED count is the number of points replaced on the File.

If, at the conclusion of each run, any data was added to the Master File, the File is copied onto Tape B1 for possible recovery use on a later run.

TDP OPERATING ON 12/15/64, AT 12 12 30, ON COMPUTER G

```
 TDP-TRACKING DATA PROCESSOR-HAS ENTERED RECOVERY MODE.
 TDP IS INITIALIZED FOR  MC3-02.MASTER FILE STATUS IS ON 3070
                    CURRENT STATUS OF MASTER FILE ON DISK

                          CURRENT MISSION    MC3-01 ,S/C ID= 03 ,GMT OF EPOCH  641200516,1000000

 TIME POINTS SENT TO MASTER FILES-  ACCEPTED     REJECTED
                                      8313         2874

 MASTER FILE DATA SUMMARY. STA COUNT  HHMMSS,DAY TO HHMMSS,DAY  ELAPSED HHMMSS,DAYS     TIMES IN SECONDS   ELAPSED
                            2  3142  161001 340    151143 349          230142   8       1.0  774103.0  774102.0
                            4  2935  161001 340    215602 349          054601   9       1.0  798362.0  798361.0
                            5  2236  190312 340    233502 349          043150   9   10392.0  804302.0  793910.0
            TDP***READY CARDS IN READER TO SELECT DESIRED OPTION.
 TDP***MASTER FILE DISPOSITION
      CONTINUE WITH MASTER ON DISC
 TDP**LINK 1 HAS PREPARED MISSION  3.
  TDP OPERATING ON 12/15/64, AT 00 00 00, ON COMPUTER G
 TDP-TRACKING DATA PROCESSOR-NOW OPERATING

                          CURRENT MISSION    MC3-01 ,S/C ID= 03 ,GMT OF EPOCH  641200516,1000000

 TIME POINTS SENT TO MASTER FILES-  ACCEPTED     REJECTED
                                      8313         2874

 MASTER FILE DATA SUMMARY. STA COUNT  HHMMSS,DAY TO HHMMSS,DAY  ELAPSED HHMMSS,DAYS     TIMES IN SECONDS   ELAPSED
                            2  3142  161001 340    151143 349          230142   8       1.0  774103.0  774102.0
                            4  2935  161001 340    215602 349          054601   9       1.0  798362.0  798361.0
                            5  2236  190312 340    233502 349          043150   9   10392.0  804302.0  793910.0
 TDP***LINK 2 PLEASE READY CARDS IN READER.
 FORMAT (3(L2,1B),4L1,1B,3L2,1B,L3,2(1B,L10),L1,2(1B,G6.3)) NUMBER 2          CARD NO.  1 FORMAT TYPE CONTROL CARD.
 FORMAT (3(L2,1B),4L1,1B,3L2,1B,L3,1B,L10,1B,K10,K1) NUMBER 3                CARD NO.  2 FORMAT TYPE CONTROL CARD.
 CHANGE SELECT DISC NOPACK TIME SORT                                         CARD NO.  3 CHANGE TYPE CONTROL CARD.
 TDP***IS PROCESSING RAW MC3-01 DATA
 CRD  4 BLANK IN DECIMAL FIELD    ST 51 DHMS 350020014 **********************************************************************
 CRD  5 CHARACTER NOT DECIMAL     ST 51 DHMS 350020045 TRACKING DATA  FROM  DATA
 CARD     6                                            51 04 03 8050 015802 350 0814738941 27085 358558 016088
 CARD     7                                            51 04 03 8050 015902 350 0821488036 27085 358788 016080
 CARD     8                                            51 04 03 8050 020002 350 0828237388 27085 359024 016094
 CARD     9                                            51 04 03 8050 020102 350 0834986985 27085 359258 016094
 CARD    10                                            51 04 03 8050 020202 350 0841736845 27085 359544 016092
 CARD    11                                            51 04 03 8050 020302 350 0848486950 27085 359790 016086
 CARD    12                                            51 04 03 8050 020402 350 0855237316 27085 000010 016086
 CARD    13                                            51 04 03 8050 020502 350 0861987926 27085 000236 016086
 CARD    14                                            51 04 03 8050 020602 350 0868738795 27085 000534 016086
 CARD    15                                            51 04 03 8050 020702 350 0875489915 27085 000790 016086
 CARD    16                                            51 04 03 8050 020802 350 0882241292 27085 001014 016118
 CRD 17 CHARACTER NOT DECIMAL     ST 51 DHMS 350021218 TQ PR PE IPTP PWPOPW ETP PLIIOOWOOR WUPIT PPOWTP PQYOPP
 CARD    18                                            51 04 03 8050 021002 350 0895744792 27085 001480 016092
 CARD    19                                            51 04 03 8050 021102 350 0902496920 27085 001766 016092
 CARD    20                                            51 04 03 8050 021202 350 0909249297 27085 002014 016098
 CARD    21                                            51 04 03 8050 021302 350 0916001935 27085 002238 016082
 CARD    22                                            51 04 03 8050 021402 350 0922754820 27085 002498 016104
 CARD    23                                            51 04 03 8050 021502 350 0929507955 27085 002748 016098
 CARD    24                                            51 04 03 8050 021602 350 0936261340 27085 003056 016102
 CARD    25                                            51 04 03 8050 021702 350 0943014980 27085 003298 016072
 TDP***IMPOSSIBLE CHARACTER IN RAW BAUDOT INPUT.
 TDP***IMPOSSIBLE CHARACTER IN RAW BAUDOT INPUT.
 TDP***IMPOSSIBLE CHARACTER IN RAW BAUDOT INPUT.
 CRD 26 BLANK IN DECIMAL FIELD    ST 51 DHMS 350023101 #1  51 04 03 8050 021802 350 0949768863 27085 003546 016070
 CARD    27                                            51 04 03 8050 021902 350 0956523008 27085 003762 016080
 CARD    28                                            51 04 03 8050 022002 350 0963277396 27085 004020 016112
 CARD    29                                            51 04 03 8050 022102 350 0970032046 27085 004298 016108
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CARD      30                                                    51 04 03 8050 022202 350 0976786930 27085 004580 016076
CARD      31                                                    51 04 03 8050 022302 350 0983542073 27085 004774 016120
CARD      32                                                    51 04 03 8050 022402 350 0990297462 27085 005044 016108
CARD      33                                                    51 04 03 8050 022502 350 0997053108 27085 005306 016078
CARD      34                                                    51 04 03 8050 022602 350 1003809002 27085 005504 016112
CARD      35                                                    51 04 03 8050 022702 350 1010565151 27085 005740 016114
CARD      36                                                    51 04 03 8050 022802 350 1017321544 27085 006024 016074
CARD      37                                                    51 04 03 8050 022902 350 1024078189 27085 006268 016094
CARD      38                                                    51 04 03 8050 023002 350 1030835088 27085 006584 016076
CARD      39                                                    51 04 03 8050 023102 350 1037592240 27085 006794 016082
CARD      40                                                    51 04 03 8050 023202 350 1044349643 27085 007048 016098
CRD 41 CHARACTER NOT DECIMAL    ST 51 DHMS 350023506 CCCC
CARD      42                                                    41 04 03 8060 153802 345 0363446520 27218 307962 015946
CARD      43                                                    41 04 03 8060 153902 345 0370062477 27218 308208 015956
CARD      44                                                    41 04 03 8060 154002 345 0376678715 27218 308462 015964
CARD      45                                                    41 04 03 8060 154102 345 0383295235 27218 308714 015960
CARD      46                                                    41 04 03 8060 154202 345 0389912036 27218 308956 015958
CARD      47                                                    41 04 03 8060 154302 345 0396529119 27218 309194 015950
CARD      48                                                    41 04 03 8060 154402 345 0403146483 27218 309450 015944
CARD      49                                                    41 04 03 8060 154502 345 0409764129 27218 309710 015944
CARD      50                                                    41 04 03 8060 154602 345 0416382056 27218 309968 015938
CARD      51                                                    41 04 03 8060 154702 345 0423000265 27193 310202 015940
CARD      52                                                    41 04 03 8060 154802 345 0429618755 27288 310462 015942
CARD      53                                                    41 04 03 8060 154902 345 0436237527 27289 310720 015946
CRD 54    DC2 OUTSIDE NORM RANGE ST 41 DHMS 3451553C8 41 04 03 866C 155002 345 0442856580 27289 310962 015944
CRD 55    DC2 OUTSIDE NORM RANGE ST 41 DHMS 34515541C 41 04 03 866C 155102 345 0449475915 27289 311208 015950
CRD 56    DC2 OUTSIDE NORM RANGE ST 41 DHMS 130010100 41 04 03 8660 155202 345 0456095530 27289 311484 015942
CRD 57    DC2 OUTSIDE NORM RANGE ST 41 DHMS 345155606 41 04 03 8660 155302 345 0462715427 27289 311710 015964
CRD 58    DC2 OUTSIDE NORM RANGE ST 41 DHMS 3451557C4 41 04 03 8660 155402 345 0469335605 27289 311954 015952
CRD 59    DC2 OUTSIDE NORM RANGE ST 41 DHMS 345155718 41 04 03 8660 155502 345 0475956064 27289 312232 015956
CRD 60    DC2 OUTSIDE NORM RANGE ST 41 DHMS 345155909 41 04 03 8660 155602 345 0482576804 27289 312494 015960
CRD 61    DC2 OUTSIDE NORM RANGE ST 41 DHMS 130010100 41 04 03 866C 155702 345 0489197824 27289 312726 015958
CRD 62    DC2 OUTSIDE NORM RANGE ST 41 DHMS 130010100 41 04 03 8660 155802 345 0495819126 27289 312946 015950
CRD 63    DC2 OUTSIDE NORM RANGE ST 41 DHMS 345160210 41 04 03 8660 155902 345 0502440709 27289 313214 015958
CRD 64    DC2 OUTSIDE NORM RANGE ST 41 DHMS 345160312 41 04 03 8660 160002 345 0509062572 27289 313470 015950
CRD 65    DC2 OUTSIDE NORM RANGE ST 41 DHMS 345160312 41 04 03 8640 160102 345 0515683928 27289 313720 015970
CRD 66    DC2 OUTSIDE NORM RANGE ST 41 DHMS 34516C5C8 41 04 03 8640 160202 345 0522305191 27289 313968 015974
CARD      67                                                    41 04 03 8040 160302 345 0528926787 27289 314212 015966
CARD      68                                                    41 04 03 8040 160402 345 0535548719 27289 314476 015980
CARD      69                                                    41 04 03 8040 160502 345 0542170985 27289 314732 015958
CARD      70                                                    41 04 03 8040 160602 345 0548793590 27289 314974 015960
CARD      71                                                    41 04 03 8040 160702 345 0555416533 27289 315218 015974
CARD      72                                                    41 04 03 8040 160802 345 0562039818 27289 315464 015970
CARD      73                                                    41 04 03 8040 160902 345 0568663444 27289 315722 015958
CARD      74                                                    41 04 03 8040 161002 345 0575287413 27289 315992 015968
CARD      75                                                    41 04 03 8040 161102 345 0581911728 27289 316228 015954
CARD      76                                                    41 04 03 8040 161202 345 0588536389 27289 316466 015960
CARD      77                                                    41 04 03 8040 161302 345 0595161398 27289 316740 015970
CARD      78                                                    41 04 03 8040 161402 345 0601786756 27289 316992 015962
CARD      79                                                    41 04 03 8040 161502 345 0608412465 27289 317214 015950
CARD      80                                                    41 04 03 8040 161602 345 0615038527 27289 317474 015956
CARD      81                                                    41 04 03 8040 161702 345 0621664942 27289 317740 015968
CARD      82                                                    41 04 03 8040 161802 345 0628291711 27288 317984 015958
CARD      83                                                    41 04 03 8040 161902 345 0634918838 27289 318224 015950
CARD      84                                                    41 04 03 8040 162002 345 0641546323 27289 318478 015956
CARD      85                                                    41 04 03 8040 162102 345 0648174166 27289 318732 015964
CARD      86                                                    41 04 03 8040 162202 345 0654802371 27289 319010 015960
CARD      87                                                    41 04 03 8040 162302 345 0661430938 27289 319254 015964
CARD      88                                                    41 04 03 8040 162402 345 0668059868 27289 319494 015986
CARD      89                                                    41 04 03 8040 162502 345 0674689163 27289 319728 015974
CARD      90                                                    41 04 03 8040 162602 345 0681318824 27289 319998 015966
CARD      91                                                    41 04 03 8040 162702 345 0687948853 27289 320254 015982
CARD      92                                                    41 04 03 8040 162802 345 0694579251 27289 320500 015964
CARD      93                                                    41 04 03 8040 162902 345 0701210018 27288 320744 015984
CARD      94                                                    41 04 03 8040 163002 345 0707841158 27289 321006 015980
CARD      95                                                    41 04 03 8040 163102 345 0714472671 27289 321244 015978
```

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CARD     96
CRD 97 CHARACTER IN BLANK FIELD ST 41 DHMS 345163518
CARD     98
CARD     99
CARD    100
CARD    101
CARD    102
CARD    103
CARD    104
CARD    105
CARD    106
CRD107 BLANK IN DECIMAL FIELD   ST 41 DHMS 345164713
CARD    108
CARD    109
CARD    110
CARD    111
CARD    112
CARD    113
CARD    114
CARD    115
CARD    116
CARD    117
CARD    118
CARD    119
CARD    120
CARD    121
CARD    122
CARD    123
CARD    124
CARD    125
CARD    126
CARD    127
CARD    128
CARD    129
CARD    130
CARD    131
CARD    132
CARD    133
CARD    134
CARD    135
CARD    136
CARD    137
CARD    138
CARD    139
CARD    140
CARD    141
CARD    142
CARD    143
CARD    144
CARD    145
CARD    146
CARD    147
CARD    148
CARD    149
CARD    150
CARD    151
CARD    152
CARD    153
CARD    154
CARD    155
CARD    156
CARD    157
CARD    158
CARD    159
CARD    160
CARD    161
```

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41 04 03 8040 163202 345 0721104558 27288 321496 015974
41 04 03 8040 163315970
41 04 03 8040 163402 345 0734369460 27289 321992 015990
41 04 03 8040 163502 345 0741002478 27289 322246 015978
41 04 03 8040 163602 345 0747635875 27289 322500 015976
41 04 03 8040 163702 345 0754269654 27289 322724 015974
41 04 03 8040 163802 345 0760903814 27289 322974 015978
41 04 03 8040 163902 345 0767538358 27289 323250 015974
41 04 03 8040 164002 345 0774173286 27289 323516 015982
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41 04 03 8040 164202 345 0787444302 27289 324002 015976
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41 04 03 8040 164502 345 0807353742 27288 324766 015952
41 04 03 8040 164602 345 0813991004 27289 325006 015968
41 04 03 8040 164702 345 0820628660 27288 325256 015978
41 04 03 8040 164802 345 0827266711 27288 325504 015958
41 04 03 8040 164902 345 0833905157 27288 325786 015954
41 04 03 8040 165002 345 0840544000 27288 326020 015954
41 04 03 8040 165102 345 0847183241 27288 326240 015966
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41 04 03 8040 165302 345 0860462922 27288 326758 015964
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41 04 03 8040 170102 345 0913597805 27289 328786 015994
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41 04 03 8040 171402 345 0999998282 27289 332030 015992
41 04 03 8040 171502 345 1006647413 27288 332280 015988
41 04 03 8040 171602 345 1013296970 27288 332552 015990
41 04 03 8040 171702 345 1019946953 27289 332792 015980
41 04 03 8040 171802 345 1026597363 27288 333018 015988
41 04 03 8040 171902 345 1033248202 27288 333284 015978
41 04 03 8040 172002 345 1039899469 27288 333544 015984
41 04 03 8040 172102 345 1046551167 27288 333798 015996
41 04 03 8040 172202 345 1053203295 27288 334036 015992
41 04 03 8040 172302 345 1059855856 27288 334300 015994
41 04 03 8040 172402 345 1066508849 27288 334536 015990
41 04 03 8040 172502 345 1073162276 27288 334774 016000
41 04 03 8040 172602 345 1079816138 27288 335042 016014
41 04 03 8040 172702 345 1086470435 27288 335290 015992
41 04 03 8040 172802 345 1093125168 27288 335544 016010
41 04 03 8040 172902 345 1099780340 27288 335796 015984
41 04 03 8040 173002 345 1106435949 27288 336050 016006
41 04 03 8040 173102 345 1113091997 27288 336304 015990
41 04 03 8040 173202 345 1119748485 27288 336550 015990
41 04 03 8040 173402 345 1133062785 27288 337046 015980
41 04 03 8040 173502 345 1139720597 27288 337316 015988
41 04 03 8040 173602 345 1146378853 27288 337578 015996
41 04 03 8040 173702 345 1153037553 27288 337792 015986
41 04 03 8040 173802 345 1159696699 27288 338036 015980
41 04 03 8040 173902 345 1166356289 27288 338316 015978
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CARD    162                                                41 04 03 8040 174002 345 1173016326 27288 338578 016002
CARD    163                                                41 04 03 8040 174102 345 1179676811 27288 338798 015994
CARD    164                                                41 04 03 8040 174202 345 1186337743 27288 339062 015984
CARD    165                                                41 04 03 8040 174302 345 1192999124 27288 339314 015990
CARD    166                                                41 04 03 8040 174402 345 1199660955 27288 339564 015994
CARD    167                                                41 04 03 8040 174502 345 1206323236 27288 339818 015988
CARD    168                                                41 04 03 8040 174602 345 1212985968 27288 340046 016008
CARD    169                                                41 04 03 8040 174702 345 1219649151 27288 340310 015990
CARD    170                                                41 04 03 8040 174802 345 1226312787 27288 340584 016004
CARD    171                                                41 04 03 8040 174902 345 1232976876 27288 340810 015974
TDP***IMPOSSIBLE CHARACTER IN RAW BAUDOT INPUT.
CRD172 CHARACTER NOT DECIMAL    ST 41 DHMS 345175311       41 04 03 8040 17500N
CARD    173                                                41 04 03 8040 175102 345 1246306416 27288 341322 015994
CARD    174                                                41 04 03 8040 175202 345 1252971869 27288 341594 016006
CARD    175                                                41 04 03 8040 175302 345 1259637778 27288 341820 015996
CARD    176                                                41 04 03 8040 175402 345 1266304143 27288 342062 015990
CARD    177                                                41 04 03 8040 175502 345 1272970965 27288 342322 016010
CARD    178                                                41 04 03 8040 175602 345 1279638245 27288 342578 015992
CARD    179                                                41 04 03 8040 175702 345 1286305984 27288 342832 016018
CARD    180                                                41 04 03 8040 175802 345 1292974182 27290 343070 015988
CRD181   DC2 OUTSIDE NORM RANGE ST 41 DHMS 345180206      41 04 03 8640 175902 345 1299642839 27290 343330 015990
CRD182   DC2 OUTSIDE NORM RANGE ST 41 DHMS 345180308      41 04 03 8640 180002 345 1306311957 27290 343586 015978
CRD183   DC2 OUTSIDE NORM RANGE ST 41 DHMS 345180411      41 04 03 8640 180102 345 1312978492 27166 343818 015994
CRD184   DC2 OUTSIDE NORM RANGE ST 41 DHMS 345180510      41 04 03 8640 180202 345 1319594037 27053 344060 016004
CRD185   DC2 OUTSIDE NORM RANGE ST 41 DHMS 345180612      41 04 03 8640 180302 345 1326173328 27050 344340 015982
CRD186   DC2 OUTSIDE NORM RANGE ST 41 DHMS 345180710      41 04 03 8640 180402 345 1332750467 27050 344620 016002
CARD    187                                                41 04 03 8040 180502 345 1339328069 27050 344830 016000
CARD    188                                                41 04 03 8040 180602 345 1345906135 27050 345058 016008
CARD    189                                                41 04 03 8040 180702 345 1352484666 27050 345340 015980
CARD    190                                                41 04 03 8040 180802 345 1359063661 27050 345602 016002
CARD    191                                                41 04 03 8040 180902 345 1365643122 27050 345836 015994
CARD    192                                                41 04 03 8040 181002 345 1372223049 27050 346078 016008
CARD    193                                                41 04 03 8040 181102 345 1378803442 27050 346348 015986
CARD    194                                                41 04 03 8040 181202 345 1385384303 27050 346590 015994
CARD    195                                                41 04 03 8040 181302 345 1391965631 27050 346838 015984
CARD    196                                                41 04 03 8040 181402 345 1398547427 27050 347096 015998
CARD    197                                                41 04 03 8040 181502 345 1405129691 27050 347346 015992
CARD    198                                                41 04 03 8040 181602 345 1411712425 27050 347598 016002
CARD    199                                                41 04 03 8040 181702 345 1418295627 27050 347860 015998
CARD    200                                                41 04 03 8040 181802 345 1424879300 27050 348120 016000
CARD    201                                                41 04 03 8040 181902 345 1431463443 27050 348350 015986
CARD    202                                                41 04 03 8040 182002 345 1438048056 27050 348604 015998
CARD    203                                                41 04 03 8040 182102 345 1444633141 27050 348850 015992
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CARD    206                                                41 04 03 8040 182402 345 1464391226 27050 349600 016010
CARD    207                                                41 04 03 8040 182502 345 1470978200 27050 349850 015994
CARD    208                                                41 04 03 8040 182602 345 1477565646 27050 350102 016008
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CARD    210                                                41 04 03 8040 182802 345 1490741960 27050 350598 015986
CARD    211                                                41 04 03 8040 182902 345 1497330828 27050 350852 016004
CARD    212                                                41 04 03 8040 183002 345 1503920170 27050 351114 015994
CARD    213                                                41 04 03 8040 183102 345 1510509988 27050 351344 015998
CARD    214                                                41 04 03 8040 183202 345 1517100281 27050 351604 015990
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CARD    216                                                41 04 03 8040 183402 345 1530282293 27050 352120 015988
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CARD    218                                                41 04 03 8040 183602 345 1543466210 27050 352618 015986
CARD    219                                                41 04 03 8040 183702 345 1550058883 27050 352850 016004
CARD    220                                                41 04 03 8040 183802 345 1556652033 27050 353096 015980
CARD    221                                                41 04 03 8040 183902 345 1563245661 27050 353364 015984
CARD    222                                                41 04 03 8040 184002 345 1569839765 27050 353628 015992
CARD    223                                                41 04 03 8040 184102 345 1576434348 27051 353858 015986
CARD    224                                                41 04 03 8040 184202 345 1583029409 27051 354114 015984
CARD    225                                                41 04 03 8040 184302 345 1589624947 27051 354358 015990
CARD    226                                                41 04 03 8040 184402 345 1596220964 27051 354634 015994
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CRD231    DP OUTSIDE NORM RANGE ST 41 DHMS 345185039
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41 04 03 8040 184602 345 1609414435 27050 355106 016010
41 04 03 8040 184702 345 1616011888 27050 355362 015978
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41 05 03 8040 190000 345 0065905167 00000
41 05 03 8040 190010 345 0067005826 00000
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CARD	293	41 05 03 8040 190020 345 0068106499 00000
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CARD	299	41 05 03 8040 190120 345 0074710816 00000
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CARD	302	41 05 03 8040 190150 345 0078013155 00000
CARD	303	41 05 03 8040 190200 345 0079113961 00000
CARD	304	41 05 03 8040 190210 345 0080214781 00000
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CARD	309	41 05 03 8040 190300 345 0085719080 00000
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CARD	311	41 05 03 8040 190320 345 0087920893 00000
CARD	312	41 05 03 8040 190330 345 0089021819 00000
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CARD	314	41 05 03 8040 190350 345 0091223712 00000
CARD	315	41 05 03 8040 190400 345 0092324679 00000
CARD	316	41 05 03 8040 190410 345 0093425659 00000
CARD	317	41 05 03 8040 190420 345 0094526652 00000
CARD	318	41 05 03 8040 190430 345 0095627658 00000
CARD	319	41 05 03 8040 190440 345 0096728679 00000
CARD	320	41 05 03 8040 190450 345 0097829712 00000
CARD	321	41 05 03 8040 190500 345 0098930759 00000
CARD	322	41 05 03 8040 190510 345 0100031818 00000
CARD	323	41 05 03 8040 190520 345 0101132892 00000
CARD	324	41 05 03 8040 190530 345 0102233979 00000
CARD	325	41 05 03 8040 190540 345 0103335079 00000
CARD	326	41 05 03 8040 190550 345 0104436192 00000

SUMMARY OF THE 326 CARDS READ. 298 ACCEPTED, 28 REJECTED.(0 UNRECOGNIZABLE, 8 FORMAT ERRORS, 20 DATA RANGE).

DATA CARDS ACCEPTED ARE UNPACKED BELOW. * INDICATES BAD DATA.

ID	DCC	G.M.T.	DAY	AZ/HA	EL/DEC	TYPE	DOPPLER	RANGE	DC6	FREQ	DAT	SECONDS	DC5	F/ID	CARD
5	805	015802	350	358.558	16.088	HA/DEC	814738941			27085	0	812882.0	0	4	6
5	805	015902	350	358.788	16.080	HA/DEC	821488036			27085	0	812942.0	0	4	7
5	805	020002	350	359.024	16.094	HA/DEC	828237388			27085	0	813002.0	0	4	8
5	805	020102	350	359.258	16.094	HA/DEC	834986985			27085	0	813062.0	0	4	9
5	805	020202	350	359.544	16.092	HA/DEC	841736845			27085	0	813122.0	0	4	10
5	805	020302	350	359.790	16.086	HA/DEC	848486950			27085	0	813182.0	0	4	11
5	805	020402	350	.010	16.086	HA/DEC	855237316			27085	0	813242.0	0	4	12
5	805	020502	350	.236	16.086	HA/DEC	861987926			27085	0	813302.0	0	4	13
5	805	020602	350	.534	16.086	HA/DEC	868738795			27085	0	813362.0	0	4	14
5	805	020702	350	.790	16.086	HA/DEC	875489915			27085	0	813422.0	0	4	15
5	805	020802	350	1.014	16.118	HA/DEC	882241292			27085	0	813482.0	0	4	16
5	805	021002	350	1.480	16.092	HA/DEC	895744792			27085	0	813602.0	0	4	18
5	805	021102	350	1.766	16.092	HA/DEC	902496920			27085	0	813662.0	0	4	19
5	805	021202	350	2.014	16.098	HA/DEC	909249297			27085	0	813722.0	0	4	20
5	805	021302	350	2.238	16.082	HA/DEC	916001935			27085	0	813782.0	0	4	21
5	805	021402	350	2.498	16.104	HA/DEC	922754820			27085	0	813842.0	0	4	22
5	805	021502	350	2.748	16.098	HA/DEC	929507955			27085	0	813902.0	0	4	23
5	805	021602	350	3.056	16.102	HA/DEC	936261340			27085	0	813962.0	0	4	24
5	805	021702	350	3.298	16.072	HA/DEC	943014980			27085	0	814022.0	0	4	25
5	805	021902	350	3.762	16.080	HA/DEC	956523008			27085	0	814142.0	0	4	27
5	805	022002	350	4.020	16.112	HA/DEC	963277396			27085	0	814202.0	0	4	28
5	805	022102	350	4.298	16.108	HA/DEC	970032046			27085	0	814262.0	0	4	29
5	805	022202	350	4.580	16.076	HA/DEC	976786930			27085	0	814322.0	0	4	30
5	805	022302	350	4.774	16.120	HA/DEC	983542073			27085	0	814382.0	0	4	31
5	805	022402	350	5.044	16.108	HA/DEC	990297462			27085	0	814442.0	0	4	32
5	805	022502	350	5.306	16.078	HA/DEC	997053108			27085	0	814502.0	0	4	33
5	805	022602	350	5.504	16.112	HA/DEC	1003809002			27085	0	814562.0	0	4	34
5	805	022702	350	5.740	16.114	HA/DEC	1010565151			27085	0	814622.0	0	4	35
5	805	022802	350	6.024	16.074	HA/DEC	1017321544			27085	0	814682.0	0	4	36
5	805	022902	350	6.268	16.094	HA/DEC	1024078189			27085	0	814742.0	0	4	37
5	805	023002	350	6.584	16.076	HA/DEC	1030835088			27085	0	814802.0	0	4	38
5	805	023102	350	6.794	16.082	HA/DEC	1037592240			27085	0	814862.0	0	4	39
5	805	023202	350	7.048	16.098	HA/DEC	1044349643			27085	0	814922.0	0	4	40

ID	DOC	G.M.T.	DAY	AZ/HA	EL/DEC	TYPE	DOPPLER	RANGE	DC6	FREQ	DAT	SECONDS	DC5	F/ID	CARD
4	806	153802	345	307.962	15.946	HA/DEC	363446520			27218	0	430082.0	0	4	42
4	806	153902	345	308.208	15.956	HA/DEC	370062477			27218	0	430142.0	0	4	43
4	806	154002	345	308.462	15.964	HA/DEC	376678715			27218	0	430202.0	0	4	44
4	806	154102	345	308.714	15.960	HA/DEC	383295235			27218	0	430262.0	0	4	45
4	806	154202	345	308.956	15.958	HA/DEC	389912036			27218	0	430322.0	0	4	46
4	806	154302	345	309.194	15.950	HA/DEC	396529119			27218	0	430382.0	0	4	47
4	806	154402	345	309.450	15.944	HA/DEC	403146483			27218	0	430442.0	0	4	48
4	806	154502	345	309.710	15.944	HA/DEC	409764129			27218	0	430502.0	0	4	49
4	806	154602	345	309.968	15.938	HA/DEC	416382056			27218	0	430562.0	0	4	50
4	806	154702	345	310.202	15.940	HA/DEC	423000265			27193	0	430622.0	0	4	51
4	806	154802	345	310.462	15.942	HA/DEC	429618755			27288	0	430682.0	0	4	52
4	806	154902	345	310.720	15.946	HA/DEC	436237527			27289	0	430742.0	0	4	53
4	804	160302	345	314.212	15.966	HA/DEC	528926787			27289	0	431582.0	0	4	67
4	804	160402	345	314.476	15.980	HA/DEC	535548719			27289	0	431642.0	0	4	68
4	804	160502	345	314.732	15.958	HA/DEC	542170985			27289	0	431702.0	0	4	69
4	804	160602	345	314.974	15.960	HA/DEC	548793590			27289	0	431762.0	0	4	70
4	804	160702	345	315.218	15.974	HA/DEC	555416533			27289	0	431822.0	0	4	71
4	804	160802	345	315.464	15.970	HA/DEC	562039818			27289	0	431882.0	0	4	72
4	804	160902	345	315.722	15.958	HA/DEC	568663444			27289	0	431942.0	0	4	73
4	804	161002	345	315.992	15.968	HA/DEC	575287413			27289	0	432002.0	0	4	74
4	804	161102	345	316.228	15.954	HA/DEC	581911728			27289	0	432062.0	0	4	75
4	804	161202	345	316.466	15.960	HA/DEC	588536389			27289	0	432122.0	0	4	76
4	804	161302	345	316.740	15.970	HA/DEC	595161398			27289	0	432182.0	0	4	77
4	804	161402	345	316.992	15.962	HA/DEC	601786756			27289	0	432242.0	0	4	78
4	804	161502	345	317.214	15.950	HA/DEC	608412465			27289	0	432302.0	0	4	79
4	804	161602	345	317.474	15.956	HA/DEC	615038527			27289	0	432362.0	0	4	80
4	804	161702	345	317.740	15.968	HA/DEC	621664942			27289	0	432422.0	0	4	81
4	804	161802	345	317.984	15.958	HA/DEC	628291711			27288	0	432482.0	0	4	82
4	804	161902	345	318.224	15.950	HA/DEC	634918838			27289	0	432542.0	0	4	83
4	804	162002	345	318.478	15.956	HA/DEC	641546323			27289	0	432602.0	0	4	84
4	804	162102	345	318.732	15.964	HA/DEC	648174166			27289	0	432662.0	0	4	85
4	804	162202	345	319.010	15.960	HA/DEC	654802371			27289	0	432722.0	0	4	86
4	804	162302	345	319.254	15.964	HA/DEC	661430938			27289	0	432782.0	0	4	87
4	804	162402	345	319.494	15.986	HA/DEC	668059868			27289	0	432842.0	0	4	88
4	804	162502	345	319.728	15.974	HA/DEC	674689163			27289	0	432902.0	0	4	89
4	804	162602	345	319.998	15.966	HA/DEC	681318824			27289	0	432962.0	0	4	90
4	804	162702	345	320.254	15.982	HA/DEC	687948853			27289	0	433022.0	0	4	91
4	804	162802	345	320.500	15.964	HA/DEC	694579251			27289	0	433082.0	0	4	92
4	804	162902	345	320.744	15.984	HA/DEC	701210018			27288	0	433142.0	0	4	93
4	804	163002	345	321.006	15.980	HA/DEC	707841158			27289	0	433202.0	0	4	94
4	804	163102	345	321.244	15.978	HA/DEC	714472671			27289	0	433262.0	0	4	95
4	804	163202	345	321.496	15.974	HA/DEC	721104558			27288	0	433322.0	0	4	96
4	804	163402	345	321.992	15.990	HA/DEC	734369460			27289	0	433442.0	0	4	98
4	804	163502	345	322.246	15.978	HA/DEC	741002478			27289	0	433502.0	0	4	99
4	804	163602	345	322.500	15.976	HA/DEC	747635875			27289	0	433562.0	0	4	100

ID	DCC	G.M.T.	DAY	AZ/HA	EL/DEC	TYPE	DOPPLER	RANGE	DC6	FREQ	DAT	SECONDS	DC5	F/ID	CARD
4	804	163702	345	322.724	15.974	HA/DEC	754269654			27289	0	433622.0	0	4	101
4	804	163802	345	322.974	15.978	HA/DEC	760903814			27289	0	433682.0	0	4	102
4	804	163902	345	323.250	15.974	HA/DEC	767538358			27289	0	433742.0	0	4	103
4	804	164002	345	323.516	15.982	HA/DEC	774173286			27289	0	433802.0	0	4	104
4	804	164102	345	323.764	15.970	HA/DEC	780808600			27289	0	433862.0	0	4	105
4	804	164202	345	324.002	15.976	HA/DEC	78744402			27289	0	433922.0	0	4	106
4	804	164502	345	324.766	15.952	HA/DEC	807353742			27288	0	434102.0	0	4	108
4	804	164602	345	325.006	15.968	HA/DEC	813991004			27289	0	434162.0	0	4	109
4	804	164702	345	325.256	15.978	HA/DEC	820628660			27288	0	434222.0	0	4	110
4	804	164802	345	325.504	15.958	HA/DEC	827266711			27288	0	434282.0	0	4	111
4	804	164902	345	325.786	15.954	HA/DEC	833905157			27288	0	434342.0	0	4	112
4	804	165002	345	326.020	15.954	HA/DEC	840544000			27288	0	434402.0	0	4	113
4	804	165102	345	326.240	15.966	HA/DEC	847183241			27288	0	434462.0	0	4	114
4	804	165202	345	326.510	15.980	HA/DEC	853822881			27288	0	434522.0	0	4	115
4	804	165302	345	326.758	15.964	HA/DEC	860462922			27288	0	434582.0	0	4	116
4	804	165402	345	327.008	15.984	HA/DEC	867103365			27289	0	434642.0	0	4	117
4	804	165502	345	327.272	15.970	HA/DEC	873744210			27288	0	434702.0	0	4	118
4	804	165602	345	327.512	15.990	HA/DEC	880385460			27288	0	434762.0	0	4	119
4	804	165702	345	327.772	15.990	HA/DEC	887027114			27288	0	434822.0	0	4	120
4	804	165802	345	328.022	15.978	HA/DEC	893669175			27288	0	434882.0	0	4	121
4	804	165902	345	328.256	16.008	HA/DEC	900311642			27288	0	434942.0	0	4	122
4	804	170002	345	328.528	15.978	HA/DEC	906954519			27288	0	435002.0	0	4	123
4	804	170102	345	328.786	15.994	HA/DEC	913597805			27289	0	435062.0	0	4	124
4	804	170202	345	329.016	15.988	HA/DEC	920241502			27288	0	435122.0	0	4	125
4	804	170302	345	329.270	15.974	HA/DEC	926885610			27288	0	435182.0	0	4	126
4	804	170402	345	329.526	15.988	HA/DEC	933530131			27288	0	435242.0	0	4	127
4	804	170502	345	329.774	15.974	HA/DEC	940175066			27288	0	435302.0	0	4	128
4	804	170602	345	330.028	15.998	HA/DEC	946820416			27288	0	435362.0	0	4	129
4	804	170702	345	330.268	15.972	HA/DEC	953466182			27288	0	435422.0	0	4	130
4	804	170802	345	330.540	15.976	HA/DEC	960112365			27288	0	435482.0	0	4	131
4	804	170902	345	330.778	15.990	HA/DEC	966758967			27289	0	435542.0	0	4	132
4	804	171002	345	331.006	15.994	HA/DEC	973405987			27288	0	435602.0	0	4	133
4	804	171102	345	331.278	15.966	HA/DEC	980053428			27288	0	435662.0	0	4	134
4	804	171202	345	331.540	15.978	HA/DEC	986701290			27288	0	435722.0	0	4	135
4	804	171302	345	331.774	15.990	HA/DEC	993349574			27288	0	435782.0	0	4	136
4	804	171402	345	332.030	15.992	HA/DEC	999998282			27289	0	435842.0	0	4	137
4	804	171502	345	332.280	15.988	HA/DEC	1006647413			27288	0	435902.0	0	4	138
4	804	171602	345	332.552	15.990	HA/DEC	1013296970			27288	0	435962.0	0	4	139
4	804	171702	345	332.792	15.980	HA/DEC	1019946953			27289	0	436022.0	0	4	140
4	804	171802	345	333.018	15.988	HA/DEC	1026597363			27288	0	436082.0	0	4	141
4	804	171902	345	333.284	15.978	HA/DEC	1033248202			27288	0	436142.0	0	4	142
4	804	172002	345	333.544	15.984	HA/DEC	1039899469			27288	0	436202.0	0	4	143
4	804	172102	345	333.798	15.996	HA/DEC	1046551167			27288	0	436262.0	0	4	144
4	804	172202	345	334.036	15.992	HA/DEC	1053203295			27288	0	436322.0	0	4	145
4	804	172302	345	334.300	15.994	HA/DEC	1059855856			27288	0	436382.0	0	4	146

ID	DOC	G.M.T.	DAY	AZ/HA	EL/DEC	TYPE	DOPPLER	RANGE	DC6	FREQ	DAT	SECONDS	DC5	F/ID	CARD
4	804	172402	345	334.536	15.990	HA/DEC	1066508849			27288	0	436442.0	0	4	147
4	804	172502	345	334.774	16.000	HA/DEC	1073162276			27288	0	436502.0	0	4	148
4	804	172602	345	335.042	16.014	HA/DEC	1079816138			27288	0	436562.0	0	4	149
4	804	172702	345	335.290	15.992	HA/DEC	1086470435			27288	0	436622.0	0	4	150
4	804	172802	345	335.544	16.010	HA/DEC	1093125168			27288	0	436682.0	0	4	151
4	804	172902	345	335.796	15.984	HA/DEC	1099780340			27288	0	436742.0	0	-4	152
4	804	173002	345	336.050	16.006	HA/DEC	1106435949			27288	0	436802.0	0	4	153
4	804	173102	345	336.304	15.990	HA/DEC	1113091997			27288	0	436862.0	0	4	154
4	804	173202	345	336.550	15.990	HA/DEC	1119748485			27288	0	436922.0	0	4	155
4	804	173402	345	337.046	15.980	HA/DEC	1133062785			27288	0	437042.0	0	4	156
4	804	173502	345	337.316	15.988	HA/DEC	1139720597			27288	0	437102.0	0	4	157
4	804	173602	345	337.578	15.996	HA/DEC	1146378853			27288	0	437162.0	0	4	158
4	804	173702	345	337.792	15.986	HA/DEC	1153037553			27288	0	437222.0	0	4	159
4	804	173802	345	338.036	15.980	HA/DEC	1159696699			27288	0	437282.0	0	4	160
4	804	173902	345	338.316	15.978	HA/DEC	1166356289			27288	0	437342.0	0	4	161
4	804	174002	345	338.578	16.002	HA/DEC	1173016326			27288	0	437402.0	0	4	162
4	804	174102	345	338.798	15.994	HA/DEC	1179676811			27288	0	437462.0	0	4	163
4	804	174202	345	339.062	15.984	HA/DEC	1186337743			27288	0	437522.0	0	4	164
4	804	174302	345	339.314	15.990	HA/DEC	1192999124			27288	0	437582.0	0	4	165
4	804	174402	345	339.564	15.994	HA/DEC	1199660955			27288	0	437642.0	0	4	166
4	804	174502	345	339.818	15.988	HA/DEC	1206323236			27288	0	437702.0	0	4	167
4	804	174602	345	340.046	16.008	HA/DEC	1212985968			27288	0	437762.0	0	4	168
4	804	174702	345	340.310	15.990	HA/DEC	1219649151			27288	0	437822.0	0	4	169
4	804	174802	345	340.584	16.004	HA/DEC	1226312787			27288	0	437882.0	0	4	170
4	804	174902	345	340.810	15.974	HA/DEC	1232976876			27288	0	437942.0	0	4	171
4	804	175102	345	341.322	15.994	HA/DEC	1246306416			27288	0	438062.0	0	4	173
4	804	175202	345	341.594	16.006	HA/DEC	1252971869			27288	0	438122.0	0	4	174
4	804	175302	345	341.820	15.996	HA/DEC	1259637778			27288	0	438182.0	0	4	175
4	804	175402	345	342.062	15.990	HA/DEC	1266304143			27288	0	438242.0	0	4	176
4	804	175502	345	342.322	16.010	HA/DEC	1272970965			27288	0	438302.0	0	4	177
4	804	175602	345	342.578	15.992	HA/DEC	1279638245			27288	0	438362.0	0	4	178
4	804	175702	345	342.832	16.018	HA/DEC	1286305984			27288	0	438422.0	0	4	179
4	804	175802	345	343.070	15.988	HA/DEC	1292974182			27290	0	438482.0	0	4	180
4	804	180502	345	344.830	16.000	HA/DEC	1339328069			27050	0	438902.0	0	4	187
4	804	180602	345	345.058	16.008	HA/DEC	1345906135			27050	0	438962.0	0	4	188
4	804	180702	345	345.340	15.980	HA/DEC	1352484666			27050	0	439022.0	0	4	189
4	804	180802	345	345.602	16.002	HA/DEC	1359063661			27050	0	439082.0	0	4	190
4	804	180902	345	345.836	15.994	HA/DEC	1365643122			27050	0	439142.0	0	4	191
4	804	181002	345	346.078	16.008	HA/DEC	1372223049			27050	0	439202.0	0	4	192
4	804	181102	345	346.348	15.986	HA/DEC	1378803442			27050	0	439262.0	0	4	193
4	804	181202	345	346.590	15.994	HA/DEC	1385384303			27050	0	439322.0	0	4	194
4	804	181302	345	346.838	15.984	HA/DEC	1391965631			27050	0	439382.0	0	4	195
4	804	181402	345	347.096	15.998	HA/DEC	1398547427			27050	0	439442.0	0	4	196
4	804	181502	345	347.346	15.992	HA/DEC	1405129691			27050	0	439502.0	0	4	197
4	804	181602	345	347.598	16.002	HA/DEC	1411712425			27050	0	439562.0	0	4	198

ID	DOC	G.M.T.	DAY	AZ/HA	EL/DEC	TYPE	DOPPLER	RANGE	DC6	FREQ	DAT	SECONDS	DC5	F/ID	CARD
4	804	181702	345	347.860	15.998	HA/DEC	1418295627			27050	0	439622.0	0	4	199
4	804	181802	345	348.120	16.000	HA/DEC	1424879300			27050	0	439682.0	0	4	200
4	804	181902	345	348.350	15.986	HA/DEC	1431463443			27050	0	439742.0	0	4	201
4	804	182002	345	348.604	15.998	HA/DEC	1438048056			27050	0	439802.0	0	4	202
4	804	182102	345	348.850	15.992	HA/DEC	1444633141			27050	0	439862.0	0	4	203
4	804	182202	345	349.100	15.994	HA/DEC	1451218697			27050	0	439922.0	0	4	204
4	804	182302	345	349.342	16.000	HA/DEC	1457804726			27050	0	439982.0	0	4	205
4	804	182402	345	349.600	16.010	HA/DEC	1464391226			27050	0	440042.0	0	4	206
4	804	182502	345	349.850	15.994	HA/DEC	1470978200			27050	0	440102.0	0	4	207
4	804	182602	345	350.102	16.008	HA/DEC	1477565646			27050	0	440162.0	0	4	208
4	804	182702	345	350.350	16.004	HA/DEC	1484153566			27050	0	440222.0	0	4	209
4	804	182802	345	350.598	15.986	HA/DEC	1490741960			27050	0	440282.0	0	4	210
4	804	182902	345	350.852	16.004	HA/DEC	1497330828			27050	0	440342.0	0	4	211
4	804	183002	345	351.114	15.994	HA/DEC	1503920170			27050	0	440402.0	0	4	212
4	804	183102	345	351.344	15.998	HA/DEC	1510509988			27050	0	440462.0	0	4	213
4	804	183202	345	351.604	15.990	HA/DEC	1517100281			27050	0	440522.0	0	4	214
4	804	183302	345	351.868	15.986	HA/DEC	1523691049			27050	0	440582.0	0	4	215
4	804	183402	345	352.120	15.988	HA/DEC	1530282293			27050	0	440642.0	0	4	216
4	804	183502	345	352.370	15.998	HA/DEC	1536874013			27050	0	440702.0	0	4	217
4	804	183602	345	352.618	15.986	HA/DEC	1543466210			27050	0	440762.0	0	4	218
4	804	183702	345	352.850	16.004	HA/DEC	1550058883			27050	0	440822.0	0	4	219
4	804	183802	345	353.096	15.980	HA/DEC	1556652033			27050	0	440882.0	0	4	220
4	804	183902	345	353.364	15.984	HA/DEC	1563245661			27050	0	440942.0	0	4	221
4	804	184002	345	353.628	15.992	HA/DEC	1569839765			27050	0	441002.0	0	4	222
4	804	184102	345	353.858	15.986	HA/DEC	1576434348			27051	0	441062.0	0	4	223
4	804	184202	345	354.114	15.984	HA/DEC	1583029409			27051	0	441122.0	0	4	224
4	804	184302	345	354.358	15.990	HA/DEC	1589624947			27051	0	441182.0	0	4	225
4	804	184402	345	354.634	15.994	HA/DEC	1596220964			27051	0	441242.0	0	4	226
4	804	184502	345	354.894	16.004	HA/DEC	1602817460			27051	0	441302.0	0	4	227
4	804	184602	345	355.106	16.010	HA/DEC	1609414435			27050	0	441362.0	0	4	228
4	804	184702	345	355.362	15.978	HA/DEC	1616011888			27050	0	441422.0	0	4	229
4	804	184802	345	355.622	16.014	HA/DEC	1622609821			27050	0	441482.0	0	4	230
4	804	185010	345			HA/DEC	989875			0	0	441610.0	0	5	232
4	804	185020	345			HA/DEC	2089747			0	0	441620.0	0	5	233
4	804	185030	345			HA/DEC	3189633			0	0	441630.0	0	5	234
4	804	185040	345			HA/DEC	4289532			0	0	441640.0	0	5	235
4	804	185050	345			HA/DEC	5389445			0	0	441650.0	0	5	236
4	804	185100	345			HA/DEC	6489371			0	0	441660.0	0	5	237
4	804	185110	345			HA/DEC	7589310			0	0	441670.0	0	5	238
4	804	185120	345			HA/DEC	8689262			0	0	441680.0	0	5	239
4	804	185130	345			HA/DEC	9789228			0	0	441690.0	0	5	240
4	804	185140	345			HA/DEC	10889207			0	0	441700.0	0	5	241
4	804	185150	345			HA/DEC	11989199			0	0	441710.0	0	5	242
4	804	185200	345			HA/DEC	13089205			0	0	441720.0	0	5	243
4	804	185210	345			HA/DEC	14189224			0	0	441730.0	0	5	244

ID	DCC	G.M.T.	DAY	AZ/HA	EL/DEC	TYPE	DOPPLER	RANGE	DC6	FREQ	DAT	SECONDS	DC5	F/ID	CARD
4	804	185220	345			HA/DEC	15289257			0	0	441740.0	0	5	245
4	804	185230	345			HA/DEC	16389302			0	0	441750.0	0	5	246
4	804	185240	345			HA/DEC	17489361			0	0	441760.0	0	5	247
4	804	185250	345			HA/DEC	18589434			0	0	441770.0	0	5	248
4	804	185300	345			HA/DEC	19689520			0	0	441780.0	0	5	249
4	804	185310	345			HA/DEC	20789619			0	0	441790.0	0	5	250
4	804	185320	345			HA/DEC	21889731			0	0	441800.0	0	5	251
4	804	185330	345			HA/DEC	22989857			0	0	441810.0	0	5	252
4	804	185340	345			HA/DEC	24089996			0	0	441820.0	0	5	253
4	804	185350	345			HA/DEC	25190148			0	0	441830.0	0	5	254
4	804	185400	345			HA/DEC	26290314			0	0	441840.0	0	5	255
4	804	185410	345			HA/DEC	27390493			0	0	441850.0	0	5	256
4	804	185420	345			HA/DEC	28490685			0	0	441860.0	0	5	257
4	804	185430	345			HA/DEC	29590891			0	0	441870.0	0	5	258
4	804	185440	345			HA/DEC	30691111			0	0	441880.0	0	5	259
4	804	185450	345			HA/DEC	31791343			0	0	441890.0	0	5	260
4	804	185500	345			HA/DEC	32891588			0	0	441900.0	0	5	261
4	804	185510	345			HA/DEC	33991848			0	0	441910.0	0	5	262
4	804	185520	345			HA/DEC	35092120			0	0	441920.0	0	5	263
4	804	185530	345			HA/DEC	36192406			0	0	441930.0	0	5	264
4	804	185540	345			HA/DEC	37292705			0	0	441940.0	0	5	265
4	804	185550	345			HA/DEC	38393018			0	0	441950.0	0	5	266
4	804	185600	345			HA/DEC	39493344			0	0	441960.0	0	5	267
4	804	185610	345			HA/DEC	40593683			0	0	441970.0	0	5	268
4	804	185620	345			HA/DEC	41694035			0	0	441980.0	0	5	269
4	804	185630	345			HA/DEC	42794401			0	0	441990.0	0	5	270
4	804	185640	345			HA/DEC	43894780			0	0	442000.0	0	5	271
4	804	185650	345			HA/DEC	44995173			0	0	442010.0	0	5	272
4	804	185700	345			HA/DEC	46095578			0	0	442020.0	0	5	273
4	804	185710	345			HA/DEC	47195998			0	0	442030.0	0	5	274
4	804	185720	345			HA/DEC	48296431			0	0	442040.0	0	5	275
4	804	185730	345			HA/DEC	49396876			0	0	442050.0	0	5	276
4	804	185740	345			HA/DEC	50497335			0	0	442060.0	0	5	277
4	804	185750	345			HA/DEC	51597808			0	0	442070.0	0	5	278
4	804	185800	345			HA/DEC	52698294			0	0	442080.0	0	5	279
4	804	185810	345			HA/DEC	53798793			0	0	442090.0	0	5	280
4	804	185820	345			HA/DEC	54899306			0	0	442100.0	0	5	281
4	804	185830	345			HA/DEC	55999832			0	0	442110.0	0	5	282
4	804	185840	345			HA/DEC	57100371			0	0	442120.0	0	5	283
4	804	185850	345			HA/DEC	58200924			0	0	442130.0	0	5	284
4	804	185900	345			HA/DEC	59301490			0	0	442140.0	0	5	285
4	804	185910	345			HA/DEC	60402069			0	0	442150.0	0	5	286
4	804	185920	345			HA/DEC	61502662			0	0	442160.0	0	5	287
4	804	185930	345			HA/DEC	62603268			0	0	442170.0	0	5	288
4	804	185940	345			HA/DEC	63703887			0	0	442180.0	0	5	289

ID	DOC	G.M.T.	DAY	AZ/HA	EL/DEC	TYPE	DOPPLER	RANGE	DC6	FREQ	DAT	SECONDS	DC5	F/ID	CARD
4	804	185950	345			HA/DEC	64804520			0	0	442190.0	0	5	290
4	804	190000	345			HA/DEC	65905167			0	0	442200.0	0	5	291
4	804	190010	345			HA/DEC	67005826			0	0	442210.0	0	5	292
4	804	190020	345			HA/DEC	68106499			0	0	442220.0	0	5	293
4	804	190030	345			HA/DEC	69207185			0	0	442230.0	0	5	294
4	804	190040	345			HA/DEC	70307885			0	0	442240.0	0	5	295
4	804	190050	345			HA/DEC	71408597			0	0	442250.0	0	5	296
4	804	190100	345			HA/DEC	72509323			0	0	442260.0	0	5	297
4	804	190110	345			HA/DEC	73610063			0	0	442270.0	0	5	298
4	804	190120	345			HA/DEC	74710816			0	0	442280.0	0	5	299
4	804	190130	345			HA/DEC	75811582			0	0	442290.0	0	5	300
4	804	190140	345			HA/DEC	76912362			0	0	442300.0	0	5	301
4	804	190150	345			HA/DEC	78013155			0	0	442310.0	0	5	302
4	804	190200	345			HA/DEC	79113961			0	0	442320.0	0	5	303
4	804	190210	345			HA/DEC	80214781			0	0	442330.0	0	5	304
4	804	190220	345			HA/DEC	81315614			0	0	442340.0	0	5	305
4	804	190230	345			HA/DEC	82416460			0	0	442350.0	0	5	306
4	804	190240	345			HA/DEC	83517320			0	0	442360.0	0	5	307
4	804	190250	345			HA/DEC	84618193			0	0	442370.0	0	5	308
4	804	190300	345			HA/DEC	85719080			0	0	442380.0	0	5	309
4	804	190310	345			HA/DEC	86819979			0	0	442390.0	0	5	310
4	804	190320	345			HA/DEC	87920893			0	0	442400.0	0	5	311
4	804	190330	345			HA/DEC	89021819			0	0	442410.0	0	5	312
4	804	190340	345			HA/DEC	90122759			0	0	442420.0	0	5	313
4	804	190350	345			HA/DEC	91223712			0	0	442430.0	0	5	314
4	804	190400	345			HA/DEC	92324679			0	0	442440.0	0	5	315
4	804	190410	345			HA/DEC	93425659			0	0	442450.0	0	5	316
4	804	190420	345			HA/DEC	94526652			0	0	442460.0	0	5	317
4	804	190430	345			HA/DEC	95627658			0	0	442470.0	0	5	318
4	804	190440	345			HA/DEC	96728679			0	0	442480.0	0	5	319
4	804	190450	345			HA/DEC	97829712			0	0	442490.0	0	5	320
4	804	190500	345			HA/DEC	98930759			0	0	442500.0	0	5	321
4	804	190510	345			HA/DEC	100031818			0	0	442510.0	0	5	322
4	804	190520	345			HA/DEC	101132892			0	0	442520.0	0	5	323
4	804	190530	345			HA/DEC	102233979			0	0	442530.0	0	5	324
4	804	190540	345			HA/DEC	103335079			0	0	442540.0	0	5	325
4	804	190550	345			HA/DEC	104436192			0	0	442550.0	0	5	326

INPUT DATA SUMMARY.	STA	COUNT	HHMMSS,DAY TO	HHMMSS,DAY	ELAPSED	HHMMSS,DAYS		TIMES IN SECONDS		ELAPSED
	4	262	153802 345	190550 345		032748	0	430082.0	442550.0	12468.0
	5	33	015802 350	023202 350		003400	0	812882.0	814922.0	2040.0

TIME POINTS SENT TO MASTER FILES-	ACCEPTED	REJECTED
	8415	3067

MASTER FILE DATA SUMMARY.	STA	COUNT	HHMMSS,DAY TO	HHMMSS,DAY	ELAPSED	HHMMSS,DAYS		TIMES IN SECONDS		ELAPSED
	2	3142	161001 340	151143 349		230142	8	1.0	774103.0	774102.0
	4	3004	161001 340	215602 349		054601	9	1.0	798362.0	798361.0
	5	2269	190312 340	023202 350		072850	9	10392.0	814922.0	804530.0

TDP***LINK2 FINISHED AND RETURNING TO SYSTEM.
TDP OPERATING ON 12/15/64, AT 12 30 20, ON COMPUTER G

APPENDIX G

OPTION SWITCH USAGE IN THE TDP

G.1. GENERAL

A limited amount of control is afforded by the use of the option switches. In Mode IV, the option switches are simulated by the keys on the 7094 console. In the event that the TDP requests option switches in Mode IV, the keys should be set and then the sign key should be entered. Raise the sign key immediately after entering it.

G.2. LINK 1

In Link 1, OS2 will simulate a CONTINUE card if set before the card reader is selected. If there is no Master File on disc, the card reader will be selected for further instructions.

G.3. LINK 2

OS1	will suppress the card read if entered before the card read is selected.
OS19	will suppress the input listing of acceptable cards on-line. It may be entered at any time. In Mode II, there is a delay in 3070 printing, so this entry may have no effect on the current run. This switch may be turned off and on.
OS20	will suppress the UNPACK on-line if entered before the UNPACK has begun. It suppresses the UNPACK for the entire run.
OS32, 33	are used in the switch loop entered during a TDP pause. If OS32 is entered during the pause, FINSYS will be called. OS33 is also used to force the TDP to pause. If this switch is reentered during the pause, ENDSYS will be called (the program will abort).

APPENDIX H

TDP DISC ALLOCATION

H.1. GENERAL

This appendix describes the allocation of TDP disc storage. Some of the information presented is not of primary interest to the user; however, it may prove useful in the event of trouble.

H.2. JPLTDQ (The "SCROD" File)

JPLTDQ is a block of 1000 records on Module 1 of the disc. It is used for scratch storage by the TDP (and the ODG). When input data is to be merged with Master File data for a particular station, the station file is transferred to the SCROD file and the data streams are merged and returned to the station file. This Merge is necessary only when the input data has associated times earlier than the last time for the station on the Master File.

H.3. JPLTDP

JPLTDP is a block of 8234 records on Module 3 of the disc. It contains a number of different logical files:

RECORD	CONTENTS
1-3000	MASTER FILE 1
3001	MASTER FILE 1 STATION SUMMARIES
3002	MASTER FILE 2 STATION SUMMARIES
3003-6002	MASTER FILE 2
6003-7899	(USED BY ODG)
7900-8234	INPUT BUFFER FOR CONTROL CARDS AND TRACKING CARDS

H.3.1 Master File Structure

Each Master File contains 15 station files; each station file initially contains 200 records. If a station file fills the 200 records initially allocated to it, additional records are assigned by taking them from the files of other stations. This reallocation is done by taking an equal number of records from all other stations that can afford the loss. Thus, the number of points that the File can hold from a particular station is not dependent on its initial allocation. The practical limit on the number of points is related to the size of the SCROD file (1000 records) since a time regression requires copying the station file onto the SCROD file. Since the occurrence of a time regression is difficult to predict, the actual number of points a station can hold is unpredictable. The TDP uses only 200 words of each 225-word disc record; therefore, the minimum number of points that may cause overflow of the SCROD file is 15,385.

SECTION II

USERS' GUIDE TO THE ORBIT DATA GENERATOR

1.0 INTRODUCTION

Of the three users programs employed in the process of orbit determination from tracking data (see Section I, Paragraph 1.0), the Orbit Data Generator (ODG) is the second, serving as the tracking data preprocessor for the Orbit Determination Program (ODP). The ODG uses as its inputs a Tracking Master File generated by the TDP, and a variety of control card information entered by the user. This program affords a flexible data selection capability that allows the running time of the ODP to be reduced substantially. The program also performs most of the trajectory-independent tasks necessary for the orbit determination function as performed by the ODP. The output of the ODG is a disc data file (ODP File) that contains, in convenient form, all the data-dependent quantities used by the ODP. Thus, it is not necessary for the ODP to do time-consuming table searches on successive iterations.

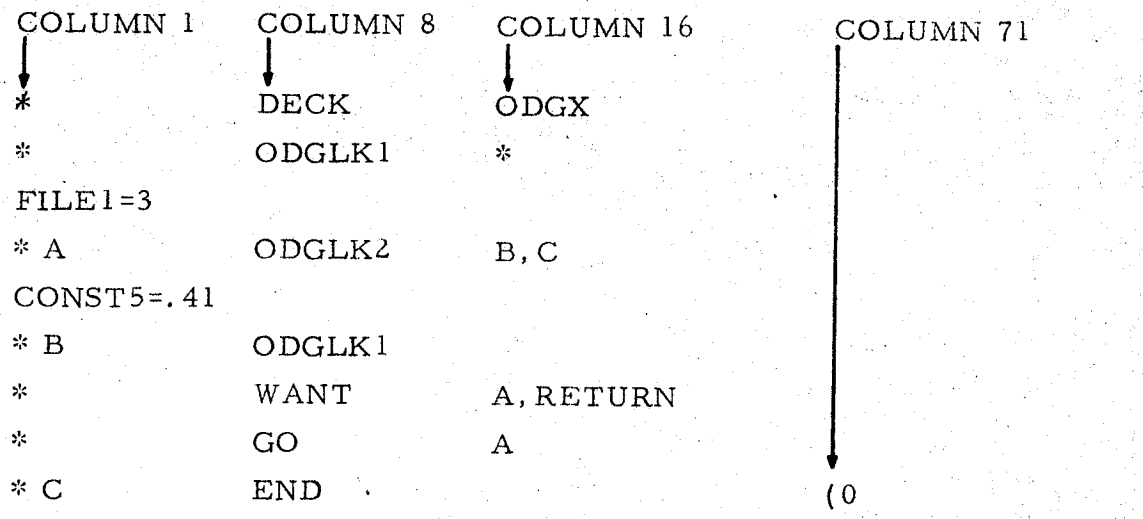
Many of the options in the program were added as the result of operational experience during the Mariner Mars '64 project. It is expected that additional options will be added as the necessity arises. Therefore, this guide should not be regarded as final and unvarying. As changes to operating procedures are made, addenda will be issued.

The ODG is a two-link progran; the links are named ODGLK1 and ODGLK2. Link 1 does control card reading and manipulation, and Link 2 performs ODP File updating functions. In normal use, all control card input is saved from run to run, making it necessary only that new control cards be entered when required. Some of the control cards are converted to an internal control record form and are saved on disc; others are saved only until the program is aborted. A small number of control cards apply only to the run currently being made. All control cards and their use will be described in this Guide.

2.0 OPERATION OF THE ODG UNDER JPTRAJ

The ODG operates under the JPTRAJ monitor; it may be run in Mode II or Mode IV. Operation in the IBSYS mode is possible only under restricted circumstances since it requires that the TDP shall also have been run under IBSYS. A listing of an ODG source deck for a typical application appears at the conclusion of this paragraph. Reference to the JPTRAJ Monitor write-up will

explain the content of the deck. In normal ODG use, only the FILE card is essential; it identifies the Master File to be referenced and the mission to be processed. Other quantities are used to define changes from nominal constants stored in the program. A description of all symbols that may be used in the ODG source deck is contained in Appendix A. Changes in the ODG source deck are discouraged; they should be made only if the user is convinced that his particular application requires such changes, and he understands clearly the potentially detrimental results of tampering with the source deck.



NOTE: Column numbers do not apply to cards 3 and 5 above.

The ODG can be run only under the program names ODGX, ODGY, or ODPX. If any other source deck name is used, the comment

ODG CALLED BY ILLEGAL SOURCE DECK

will be printed and the program will abort.

ODGX and ODGY can be initialized for the same mission, for different missions, for different Master Files, or for the same Master File. In general, the programs may not be time-shared but may be run sequentially. The ODG may not be time-shared with the TDP or the ODP. The actions of ODGX and ODGY are identical.

3.0 PROGRAM INITIALIZATION

It is necessary to select the appropriate Master File and mission number before reading the ODG source deck. This is done by inserting in the source deck a FILE card identical to the one that

was read in the TDP when the desired Master File was generated or updated. When the program is first turned on, the FILE initialization is checked. The following checks are performed:

1) Has the user read both a FILE1 and a FILE2 card? If so, the comment

UNABLE TO LOCATE FILE FOR REQUESTED MISSION

will be printed and the program will abort (or must be aborted in Mode II).

2) Has the user read neither a FILE1 nor a FILE2 card? If so, the same comment as in the first test will be printed. A nonworking Mode II option exists to read the correct mission number via the Message Composer, but this option should not be used.

3) Does the requested File (1or 2) contain the requested mission number? If so, initialization is assumed to be correct. If not, the program will check to see if the other File contains the requested mission number; if so, that File will be used for further processing. This procedure makes it unnecessary to know which File contains the appropriate mission data (as long as both Files are not initialized for the same mission). If this test fails, the program will print the comment above and abort. In any event, when the program is entered initially, i.e., when it is started afresh, the status of both Master Files is printed. If the initialization in the source deck is incorrect, the user may then correct it and read the source deck again.

If the initialization is correct, the program will print the status of the Master File selected and proceed. The print of the selected Master File is made every time the program is entered, so that the first time it will be printed twice, and the status of the other Master File will be printed once.

Other initialization may be performed in the source deck or via control cards.

4.0 CONTROL CARD PROCESSING IN THE ODG

Control cards read in the ODG have the same general format as those read in TDPLK2 (but not in TDPLK1). Control cards fall into the following categories:

1) Data Range Cards (IGNORE, CHANGE EPOCH).

These cards are used to define the acceptable time spans over which data is acceptable. The EPOCH card does this positively, the IGNORE card negatively.

2) Information Cards (WEIGHT, SAMPLE, PASSID)

The PASSID card is not used in the ODG for data processing; it is merely passed to the ODP for use in segmenting the statistics printouts. No malfunction will occur in the ODG if no PASSID cards are read.

The SAMPLE card is used only as information for ODP use when destructive doppler or angles are processed. The WEIGHT card is used for a priori weighting in the ODP.

3) Validity checking (CHANGE, SAMPLE, TRANSMITTER, FREQ, L TO S)

The following CHANGE cards are used for validity checking:

CHANGE USE ONLY CHECKED FREQUENCIES
CHANGE USE FREQUENCIES NOT CHECKED
CHANGE USE INPUT FREQUENCIES
CHANGE NO DOPPLER NOT IN AUTO TRACK
CHANGE USE DC2 MANUAL DATA
CHANGE MINIMUM ELEVATION ANGLE
CHANGE MAXIMUM ELEVATION ANGLE

4) Miscellaneous and Procedure Cards

The following cards perform miscellaneous functions.

REMOVE
PRINT
CHANGE EXECUTE
CHANGE READ MORE CARDS
CHANGE RATE
CHANGE NEW ODP FILE
CHANGE NO ODP FILE
CHANGE NO ANGLE CORRECTIONS
CHANGE RESTORE ODP FILE FROM TAPE

Control card decks must be followed by an END DATA card with a (0 in Columns 71-72 and, in Mode II, a blank card.

4.1 Control Card Formats

The ODG uses a flexible control card input that allows English language communication; it is largely free of spacing restrictions. Each control card has a control word in Columns 1 through 6; this control word is the only one subject to strict spacing requirements. The control word must begin in Column 1 and the next item on the card must not begin before Column 7. Thus, CHANGE may be followed without a space, FREQ must be followed by at least two spaces, and L TO S must have two spaces internal to it. A numeric field must be terminated by a space or a comma. These are the only spacing restrictions. A control card may not be continued onto another card; any item of control information can be accommodated on a single card. Fields on CHANGE cards may be stacked on a single CHANGE card, provided the word STATION appears, if at all, only as the last word on the card. For example:

CHANGE USE FREQUENCIES NOT CHECKED USE INPUT FREQUENCIES

is the same as the two cards

CHANGE USE FREQUENCIES NOT CHECKED
CHANGE USE INPUT FREQUENCIES

As many items can be stacked on the card as space permits. The data must not extend past Column 72.

4.2 Control Card Handling

Some of the control cards are stored semipermanently on the disc, some stay in effect only as long as the program is not aborted, and others apply only to the current run. Those of the first type are merged with others that might have been read in during an earlier run. Provision has been made for editing the control table on the disc and printing the contents of this table by control card type or time sequence. There are two control card tables stored on the disc, one for processing Master File 1 and the other for processing Master File 2. Access to the appropriate table is automatic without need for user action. There is provision on the disc for storing only one ODP File, so dual mission capability is not complete. However, the ODP File is saved on tape after each updating; the ODP Files may therefore be interchanged if desired.

A maximum of 5714 control records may be stored in each control file. Since the number of control records will usually be greater than the number of control cards read, it is difficult to predict how

many semipermanent control cards may be read before some must be removed. In any event, 5714 control records are greatly in excess of any projected future requirements so that the question is more or less academic.

4.3 Handling of Semipermanent Control Cards (Except IGNORE)

The handling of all semipermanent control cards except IGNORE cards is similar; they will therefore be discussed as a group. These control types are:

FREQ, SYNFRQ } Equivalent

L TO S BIAS, INFRQ BIAS, INFREQ BIAS } Equivalent

PASSID

WEIGHT

TRANSMITTER ON

COUNT TIME

SAMPLE TIME

Appendix B contains a description of the internal control record formats. Any of these control card groups may be read in time brackets by station. The generic form is:

(CONTROL WORD) AT HHMMSS, DAY, YR, STATION I

(CONTROL WORD) AFTER HHMMSS, DAY, YR, STATION I

(CONTROL WORD) FROM HHMMSS, DAY, YR, TO HHMMSS, DAY, YR, STATION I

(CONTROL WORD) BEFORE HHMMSS, DAY, YR, STATION I

(CONTROL WORD) STATION I

The time brackets are self-explanatory. Any number of stations may be referenced on a control card except on a TRANSMITTER control card. For TRANSMITTER cards, AT has the same meaning as AFTER. Additional information is inserted after the control words as required.

The ODG uses the TDP Master File Epoch time as a zero time reference for control card processing. No start time may begin

before this Epoch. If it does, the ODG prints an error comment and asks for replacement of the control card. The stop time must not be earlier than the start time. The year may be omitted if it is the same as the TDP current year.

When a new control card is read, it replaces any control records that lie in the time span of the new card. If the time spans overlap, the times are adjusted on the old record to span only that period of time not covered by the new control card. It is necessary to make a distinction between cards read on the same run and cards read on a later run. All cards read in together are sorted out and arranged in time sequence as accurately as possible, but certain time brackets will wipe out others if read in at the same time. For example, if

COUNT TIME 60 BEFORE 120000, 312, 64, STATION 1
COUNT TIME 10 BEFORE 110000, 312, 64, STATION 1

are read in at the same time, only the first card will be used, since it spans the entire time period covered by the second card. If the second card is read on a later run, it will displace the first card in the earlier time bracket.

To simplify control table updating, the control card

CHANGE EXECUTE

has been introduced. If this card is inserted between the two COUNT TIME cards, both cards will be used, the second card covering the time period up to 110000, and the first card between 110000 and 120000. Whenever an EXECUTE card is read, all control operations are performed on the cards read since the last EXECUTE card. Only cards pertaining to semipermanent control cards are affected by the EXECUTE card. This includes PRINT and REMOVE cards.

4.3.1 Preparation of the Control Table

When the status of the Control Table is unknown or when mission processing is to be begun from scratch, the cards

REMOVE ALL CONTROLS
CHANGE EXECUTE

may be used to clear the Control Table. It is not necessary to do this unless it is suspected that the Control Table may have been altered between runs. The logic depends heavily on the Control Table having been written in strict format, and checks on

its validity are not adequate. Normally the Control Table will not be altered unless the computers are taken out of the SFOF mode between ODG runs, and non-SFOF programs use the ODG disc allocation. This is not likely to occur, so it should be safe to continue with the same Control Table during the life of a lunar mission. Note that if the EXECUTE card is not used, all control cards read in after the REMOVE card up to the next EXECUTE card or the end of the deck will be removed together with the control cards already on the disc.

4.3.2 FREQ and SYNFRQ Cards

The general form of the FREQ card is

FREQ F, (TIME BRACKET), STATION I

FREQ G, (TIME BRACKET), BEACON

where:

F = frequency in fixed point with assumed decimal point before the last digit. The frequency has 20 megacycles added to it later in the program, so only the frequency increment should be used here. Thus, if the frequency is 22039547.5, F=20395475

G = frequency in fixed point with assumed decimal point after the last digit. The beacon frequency has 2290 megacycles added to it later in the program, so only the frequency increment should be used here. Thus, if the transponder frequency is 2295000000.,G=5000000

SYNFRQ is a synonym for FREQ. It was added to allow the user to employ a six-character code word for frequencies. There is no other difference between FREQ and SYNFRQ. The FREQ card is also used when K_S becomes an input for S-band stations.

4.3.3 L TO S, INFRQ AND INFREQ Cards

The general form of the L TO S card is

L TO S BIAS F, (TIME BRACKET), STATION I

This card is used to enter K_1 for L/S stations. As in the FREQ cards, F is in fixed point with the assumed decimal point before the last digit and 20 megacycles is added later. INFRQ and INFREQ are synonyms for L TO S.

4.3.4 PASSID Cards

The general form of the PASSID card is

PASSID P, (TIME BRACKET), STATION I

where:

P = five numeric digits. The PASSID is transmitted to the ODP for labeling statistics. It has no function in the ODG.

When the PASSID is put on the ODP File, it is converted to BCD and a slash is inserted between the second and third digits. Thus, if 01242 is inserted on a PASSID card, the ODP File will have 01/242 in the appropriate time bracket. If no PASSID has been entered for a particular time point, the word "NONE" is put in the PASSID slot.

4.3.5 WEIGHT Cards

The general form of the WEIGHT card is

WEIGHT XXX DATA TYPE Q, (TIME BRACKET), STATION I

where:

XXX = one or more of R, DR, EL, AZ, C1, CC3, C3, RU, DEC, HA, ANGLES, ANGLE, DOPPLER. The words "DATA TYPE" may be shortened to DATA or TYPE, or DT, if additional space is required on the control card.

Q = The six-digit octal code used by the ODP for a priori weighting.

If no weight code has been entered for a particular point, the ODG will use a nominal value stored in the program. These values are listed hereunder.

Data Type	Weight Code
R	314340
DR	314333
EL	121300
AZ	121300
DEC	121300

Date Type	Weight Code
HA	121300
C1	314333
CC3	314333
C3	314333
RU	211244

4.3.6 TRANSMITTER Cards

The general form of the TRANSMITTER card is

TRANSMITTER ON (TIME BRACKET), STATION I
TRANSMITTER ON (TIME BRACKET), BEACON

The TRANSMITTER card is usually used with an "AT" time; for this card, AT is the same as AFTER. This card is used to establish the time at which a station has turned on its transmitter. It is used as a check on the ground mode data condition code (DC3). If DC3 is in conflict with the TRANSMITTER table, the data will be ignored. All transmitters are assumed off, unless turned on. Only one station may be transmitting in any time interval; when a beacon card is in effect, no station may be transmitting. When a station is receiving coherent 3-way data from another station, the correct station transmitter should be used. At present, the ODG allows coherent 3-way (DC3=3 or 7) only from Station 2 (internal) with Station 3 (internal) transmitting. This is a defect in the program and will be corrected in the near future.

4.3.7 COUNT, SAMPLE Cards

The general form of the COUNT and SAMPLE cards is

COUNT TIME C, (TIME BRACKET), STATION I
SAMPLE TIME S, (TIME BRACKET), STATION I

where:

S = time interval (in fixed point seconds) during which the data was sampled.

C = desired count interval for CCD compression.

SAMPLE cards have two distinct functions:

1) For all data but CCD, the sample time is not used by the ODG; the ODG merely notes it on the ODP File records to be used by the ODP for a priori weighting.

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2) For CCD, the sample time serves a data validation function. In the doppler compression subroutine (Appendix E), the interval between successive points is checked against the sample time that was read in. If the intervals do not compare, the ODG will not compress over the interval and the data point will be ignored.

COUNT cards are used to establish the interval over which CCD is to be compressed. It may be compressed to any integral multiple of the sample time, from one sample time to 1023 seconds. When the compressed data point is put on the ODP file, the count interval is substituted for the sample interval. Note that it is assumed here that doppler compression may be performed over one sample interval; common usage for the word "compression" implies that compression is performed over more than one sample interval.

If one or both of the SAMPLE or COUNT cards is not used for CCD, the following operations are performed:

1) If a SAMPLE card is read but not a COUNT card, COUNT is set equal to SAMPLE.

2) If a COUNT card is read but not a SAMPLE, the program will compute the sample time itself and compress to the sample time if it is greater than the count time, or compress to the count time if it is greater than the sample time. This is a confusing mode of operation, and accordingly should be avoided by the weak-hearted.

3) If neither COUNT nor SAMPLE is read, the sample time will be computed and data will be compressed to the sample time.

In the event that a SAMPLE card is not read, the data will not be compressed if the computed sample time exceeds 60 seconds.

4.4 IGNORE Card Logic

The general form of the IGNORE card is

IGNORE XXX, (TIME BRACKET), STATION I

where:

XXX = one or more of R, DR, EL, AZ, DEC, HA, C1, CC3, C3, RU, ANGLES, ANGLE, DOPPLER. In addition, any IGNORE may be identified as being for COUNTER 1 or COUNTER 2. For example,

IGNORE COUNTER 2 HA, DOPPLER, STATION 4

will ignore COUNTER 2 hour angle and doppler (all types) if DC3 = 0, 1, 2 or 3 for all times.

Program logic for handling IGNORE cards is the most complicated logic (and probably the least satisfactory) found in the ODG. It is not working properly at this time; anomalies are frequent. The description given here provides an indication of how the IGNORE cards should be used to avoid the major pitfalls associated with them.

For a particular station and time bracket, only one IGNORE card is stored in the Control Table, regardless of the number of data types to be ignored in that time bracket (see Appendix B for the IGNORE control record format). Thus, if the two IGNORE cards

IGNORE C1 STATION 2

IGNORE RU FROM 110000, 315, 65, TO 120000, 315, 65, STATION 2

are read, three IGNORE control records will be generated, as if the IGNORE cards

IGNORE C1 BEFORE 110000, 315, 65, STATION 2

IGNORE C1, RU FROM 110000, 315, 65, TO 120000, 315, 65, STATION 2

IGNORE C1 AFTER 120000, 315, 65, STATION 2

had been read. This can give rise to a plethora of control records if a number of IGNORE cards is read. In addition, the proliferation of IGNORE cards does not always work correctly. In order to avoid trouble, it is suggested that all IGNORE cards be read in again each time the program is run, using

REMOVE IGNORES STATION I

CHANGE EXECUTE

before each updating of the Control Table. For general information, it is worthwhile to note here that new IGNORE cards have a tendency to erase old IGNORE cards in the same time brackets, even though the data types are distinct. It is hoped that the IGNQRE logic will be simplified and corrected in the near future.

4.5 REMOVE and PRINT Cards

The REMOVE card has been referred to previously. As the name indicates, its function is to remove one or more control records from the Control Table. The PRINT card functions logically in a similar way to the REMOVE card, but of course the end result is quite different, since it merely causes one or more control records to be printed.

When control records are stored in the Control Table, they are numbered. These numbers are assigned relative to the first record in the Control Table, so that they will change if other records are inserted in the Control Table. Control records may be removed or printed by control numbers, or by control type and by station. The general form of the REMOVE and PRINT cards is:

```
REMOVE CONTROL N
REMOVE ALL CONTROLS
REMOVE IGNORES STATION I
REMOVE PASSIDS STATION I
REMOVE TRANSMITTERS STATION I
REMOVE FREQUENCIES STATION I
REMOVE WEIGHTS STATION I
REMOVE COUNTS STATION I
REMOVE SAMPLES STATION I
```

PRINT control cards are similar in form, except that PRINT is substituted for REMOVE.

It should be recalled that the REMOVE card will not take effect until a CHANGE EXECUTE card is read, or all cards are read if no CHANGE EXECUTE is read. Therefore, if new cards are to be read to replace the ones being removed, a CHANGE EXECUTE should be inserted between the REMOVE card and the new cards. This is especially important when removing by control number, since the numbering may change before the program takes action on the REMOVE card.

If it is desired to print control records by logical block (such as by station, etc.) the blocks should be separated by CHANGE EXECUTE cards. In this way, listings may be made of the control cards in different ways for the user's convenience in checking his input. As an example:

```
PRINT TRANSMITTERS STATION 2
CHANGE EXECUTE
PRINT FREQUENCIES STATION 2
CHANGE EXECUTE
```

The above cards will cause printing of a time-ordered table of "transmitter on" times for Station 2 followed by a time-ordered table of frequencies for Station 2.

```
PRINT TRANSMITTERS STATION 2
PRINT FREQUENCIES STATION 2
CHANGE EXECUTE
```

The above cards will cause printing of a single time-ordered table of "transmitter on" times interspersed with the associated transmitter frequencies for Station 2.

4.6 CHANGE Cards

CHANGE USE FREQUENCIES NOT CHECKED

CHANGE USE INPUT FREQUENCY

CHANGE USE INPUT FREQUENCIES

CHANGE USE ONLY CHECKED FREQUENCIES

The frequency check test for L/S-band frequencies is described in Appendix C. These control cards perform the indicated functions. The INPUT FREQUENCIES (or FREQUENCY) card will be effective if the data C2 value is zero, or if the USE FREQUENCIES NOT CHECKED card is also read. These cards are effective only on the current ODG run; they must be read in on any run in which they are required. The nominal mode is USE ONLY CHECKED FREQUENCIES. Note that these cards may not be read by time or station; they are effective for all L/S-band stations for all points processed during the run.

CHANGE NO DOPPLER NOT IN AUTO TRACK

This card may be used to reject data having DC2=1 (good doppler in aided track). It is effective for one run only and is effective for all stations.

CHANGE USE DC2 MANUAL DATA

This card is used to accept ETR data having DC2≠2 and DSIF data having DC2=4, 5 and DC5=1. It is effective for one run only for all stations.

CHANGE MINIMUM ELEVATION ANGLE A, STATION I

CHANGE MAXIMUM ELEVATION ANGLE B, STATION I

These cards are used to change the limits on elevation angle for the check made in Link 2 (see Appendix F). They remain in effect until the program is aborted.

A = minimum elevation angle (floating point).

B = maximum elevation angle (floating point).

Either one or both of these cards may be read. The input value is converted to sin (EL) and stored in the MINEL or MAXEL tables. These cards may not contain time brackets.

CHANGE EPOCH HHMMSS, DAY, YR, STATION I

This card is used to define the earliest time for Station I to be used in updating the ODP File. If an EPOCH card is not read, the ODG will generate an EPOCH for each station which is the last time on the ODP File for that station. Thus, the EPOCH card pertains to the ODP File, while the IGNORE card pertains to the Master File. If a new ODP File is to be made, the station epochs will be set to zero unless an EPOCH card is used. The EPOCH card is effective only on the current ODG run. If the time on the EPOCH card is later than the last Master File time for the station, the card functions as IGNORE STATION I but is much faster. If the EPOCH card contains a time earlier than the last time for the station on the ODP File, earlier data may be merged onto the ODP File. Duplicated points are replaced if this occurs.

CHANGE RATE N, STATION I

This card may be used to reduce the number of points sent to the ODP File. If a value of N is used, every (N+1) th point will be sent to the ODP File for Station I. This card remains in effect until the program is aborted. If it is to be removed, use CHANGE RATE O, STATION I.

CHANGE READ MORE CARDS

This card is used to cause the ODG to select the card reader again after it has processed all the control cards read in at the time this card was read. It may be used to cause the ODG to pause while the user is checking his inputs. If Option Switch 1 is entered to terminate the pause, the card read will be skipped and the program will proceed.

CHANGE NO ODP FILE

This card will cause the program to finish its current run without updating the ODP File. It may be used if it is desired only to edit the Control Table on the current run. It is effective one time.

CHANGE NEW ODP FILE

This card will cause the program to remake the ODP File from scratch. It is effective one time.

CHANGE RESTORE ODP FILE FROM TAPE

This card will cause the program to select B2 and read a saved ODP File onto the disc. This control card may be simulated by entering Option Switch 10 before Link 2 is entered. It is effective one time.

CHANGE NO ANGLE CORRECTIONS

This card is used to suppress angle corrections to Stations 4 and 5 data. Refer to Appendix F for a description of the angle corrections. It is effective for one run.

4.7 Comment Cards

For convenience in labeling outputs, a comment card has been introduced. Any card with an asterisk (*) in Column 1 will be treated as a comment card. This card will be printed (without the asterisk) on the administrative printer and off-line.

Any number of comment cards may be read on any run; the insertion of comments has no effect on the operation of the program. The comment card is not included in the numbering of control cards.

Any card that does not end with STATION may be followed by a dollar sign ($). Any comments desired may be punched following the dollar sign. The program will be corrected in the near future to allow the use of the dollar sign on all control cards.

4.8 Control Card Error Returns

It is possible that the user may at some time allow a control card with an error in it to be read into the ODG. The program contains an elaborate set of error-checking operations; thus, most errors will be caught. However, it is wise to check the input deck before reading it in.

When an error is encountered in a control card, the program prints the following comment on the administrative printer:

ODG***THE FOLLOWING CONTROL CARD HAS AN ERROR STARTING IN COLUMN XX

The column number (XX) refers to the start of the field in which the error was found. The control card in error is then printed on the administrative printer. Following this print is the advice:

READY A REPLACEMENT IN READER. END DATA REJECTS.

ENTER SWITCHES. 32 CALLS FINSYS, 33 ABORTS. OTHERWISE, PROGRAM CONTINUES

The program will then pause and await the appropriate option switch entry.

When the control card has been corrected, put it in the reader (followed by an END DATA card and a blank card in Mode II). When an option switch entry (other than 32 or 33) has been made, the card reader will be selected and the corrected card read. No additional control cards may be read at this time; the ODG will ignore all control cards read except the first one and the END DATA card. If the user finds that additional cards need to be read, he should take this opportunity to substitute a CHANGE READ MORE CARDS control card for the card in error, if one was not already in his input deck. In Mode IV, it is necessary to read only the corrected card (or an END DATA, if the card is to be rejected); an END DATA card is not required behind the corrected card.

5.0 ODG PROGRAM ERROR RETURNS

All error conditions in the ODG are accompanied by administrative printer comments. These comments are reasonably explicit but could be improved. The following comments are "standard" error comments:

ODG***DISC TRANSMISSION ERRORS HAVE OCCURRED.

Although this comment may appear to be self-explanatory, it is not. It may arise from any error return from the SFOF Programming System disc read-write program (DCP) and should be regarded with a jaundiced eye. Insist on clarification from the programmer.

ODG***A NON-EXISTENT STATION HAS BEEN REQUESTED.

Although this comment may arise from a computer error, it is most likely to be due to a program dysfunction. It cannot be caused by a bad control card.

ODG***THE SCROD FILE IS TOO SMALL.RESTART THE PROGRAM WITH LARGER FILE BOUNDS

The ODP File contains too many points and has overflowed. This comment is misleading since the file bounds may not be enlarged.

ODG***MASTER FILES REQUESTED ON DISC DO NOT EXIST.

This can arise from a computer failure, incorrect initialization, or, least likely, a program dysfunction.

ODG***STATION NUMBER UNACCEPTABLE FOR XR1

Program dysfunction or computer failure.

In general, any disastrous error condition will result in the comment

IMPOSSIBLE SITUATION HAS ARISEN. PROBABLE MACHINE FAILURE NEAR LOCATION (XXXXX) OCTAL.

This comment is usually accompanied by an appropriate error comment and the program aborts with the comment

ENDSYS HAS BEEN CALLED.

Except for the ODP File overflow or initialization errors, there are no "normal" error conditions. Any abnormal program termination should cause the user to notify the cognizant programmer immediately.

APPENDIX A

SYMBOLS ALLOWED IN THE ODG SOURCE DECK

A.1. ODGLK1

FILE1: The Master File to be read is the first file, S/C ID is the data item, viz.,

FILE1 = 42

FILE2: The Master File to be read is the second file, S/C ID is the data item, viz.,

FILE2 = 56

MISS1: Synonym for FILE1

MISS2: Synonym for FILE2

MARNO: Synonym for FILE1

SURNO: Synonym for FILE2

Restrictions: Only one file may be referenced; S/C ID must correspond to S/C ID on at least one file.

ICLASS: As in TDPLK2 source deck, this references the end of a 15-word table that shows whether a particular station is a DSIF, ETR, or other station. This table should be the same as the corresponding table in the TDP. ICLASS-J=0, if Station J (internal) is a DSIF (doppler) station.

ICLASS-J=PDDDDDTAAAAA/8

where:

J = Internal Station ID

P = 4 if station is RA-DEC,

= 0 if station is AZ-EL or HA-DEC.

(A DSIF station may be made RA-DEC by using ICLASS-J=400000000000/8 in the source deck)

DDDDD = 0 if station has a DC2 assigned

DDDDD ≠ 0 if station has no DC2 or DC2 is not to be checked

T = 0 DSIF

T ≠ 0 ETR

AAAAA = 0

A program storage conflict requires that Station 15 not be used in the ODG.

IMAXEL: This references the end of a 15-word table that defines the maximum elevation angle at which angles are acceptable for a particular station. The sine of the maximum angle is stored in this table. IMAXEL-J=sin (maximum elevation angle for Station J).

IMINEL: Same as IMAXEL but for minimum elevation angle.

INFRQ, INFREQ, MISSK1: These symbols have no function at the present time.

A.1.1. Nominal Values

FILE1: None

FILE2: None

ICLASS:

Station	Class
1	DSIF
2	DSIF
3	DSIF
4	DSIF
5	DSIF
6	ETR
7	ETR
8	ETR
9	ETR
10	ETR
11	ETR
12	DSIF
13	DSIF
14	ETR (RA-DEC)
15	Not Available

NOTE: If Station 14 is to be used as a RA-DEC station, the card ICLASS-14=477777700000/8 should be used if no DC2 field is present or if DC2 has a DSIF definition.

IMAXEL:

Station	Sin(MAXEL)
1	0.99625 (MAXEL = 85°)
2	1.0
3	0.99625 (MAXEL = 85°)
4	1.0
5	1.0
6	1.0
7	1.0
8	1.0
9	1.0
10	1.0
11	1.0
12	1.0
13	1.0
14	1.0
15	1.0

IMINEL:

Station	Sin (MINEL)
1	0.08716 (MINEL = 5°)
2	0.17365 (MINEL = 10°)
3	0.08716 (MINEL = 5°)
4	0.17365 (MINEL = 10°)
5	0.17365 (MINEL = 10°)
6	0.0
7	0.0
8	0.0
9	0.0
10	0.0
11	0.0
12	0.17365 (MINEL = 10°)
13	0.17365 (MINEL = 10°)
14	0.0
15	0.0

A.2. ODGLK2

SOURCE: ODGLK2 has two exit symbols, as indicated in the listing of the source deck. The ODG normally chooses the first of these two exits. If it is desirable to use the second exit, use SOURCE = 2.

RETURN: This symbol is used for communication between ODGLK2 and ODGLK1 to indicate that ODGLK1 is not to re-initialize COMMON. No user action is required and should be discouraged.

MAKEDO: This symbol references a 10-word scratch buffer in the subroutine MAKED; it is used for relativizing octal correctors. User actions are undesirable.

CONST1, CONST2, CONST3, CONST4: These symbols reference constants used in the computation of f_q from the C2 field on L/S tracking messages. The equation is described in Appendix C.

CONST5, CONST6: These symbols reference tolerance tests for the L/S frequency check. CONST5 is used for synthesizer frequency checks and CONST6 for VCO crystal oscillator checks (see Appendix C).

LTWO, LSTWO, STWO: These symbols reference constants used in determining whether a particular doppler point is counted at every zero crossing or at every other zero crossing.

L1BIAS, L2BIAS, L3BIAS: For L-band data, only constants may be used in bias stripping. These symbols may be used to define the values to be stripped (see Appendix D).

CON1, CON2, CON3, CON4, CON5, CON6: These symbols reference quantities used for L/S- and S-band bias stripping. Equations used are described in Appendix D.

FRETCH: This symbol references the storage cell that determines whether frequency checks are to be made for L/S stations. This cell should normally be altered by control card input rather than source deck change, since this input will override any card input.

Usage: FRETCH=DDDDD0AAAAA/8

where:

DDDDD≠ 0 is the same as USE INPUT FREQUENCIES

AAAAA = 0 is the same as USE FREQUENCIES NOT CHECKED

A.2.1. Nominal Values

In this list, D denotes double precision.

SOURCE	=	1
RETURN	=	32767
MAKEDO	:	None
CONST1	=	50000
CONST2	=	100000
CONST3	=	7800000
CONST4	=	-5.0
CONST5	=	0.4
CONST6	=	2.0
LTWO	=	1.0E8
LSTWO	=	1.0E8
STWO	=	0.3E6
D L1BIAS	=	0.0
D L2BIAS	=	1.0E5
D L3BIAS	=	0.0
D CON1	=	96.0 x 240.0/221.0
D CON2	=	30.0
D CON3	=	96.0
D CON4	=	30.0/96.0
D CON5	=	1.0E6
D CON6	=	3.0E7

FRETCH = 0 (Use only checked frequencies)

APPENDIX B

CONTROL RECORD FORMAT ON DISC

Word	Bits	Function
0	3-17	Contains D=6 (Discbu word)
1	S, 1, 2	UNUSED
	3-17	EXTERNAL CONTROL NUMBER
	18-20	UNUSED
	21-28	CONTROL RECORD TYPE 101 = FREQ 102 = TRANSMITTER 103 = PASSID 104 = COUNT TIME 105 = SAMPLE TIME 106 = IGNORE 107 = INFREQ BIAS 1-12 = WEIGHT (SPECIFIES DATA TYPE)
	29-35	STATION ID (FOR TRANSMITTER, STATION ID IS ZERO)
2-3		DOUBLE PRECISION START TIME
4-5		DOUBLE PRECISION STOP TIME
6		CONTROL INFORMATION FREQUENCY (FLOATING PT) TRANSMITTER ID (BEACON IS 127) PASSID (FIXED PT) COUNT TIME (FIXED PT) SAMPLE TIME (FIXED PT) IGNORE

Bits	
1-11	Same as ODP File Data type assignment
34	Counter 2 Doppler
35	Counter 1 Doppler

APPENDIX C

FREQUENCY CHECK TEST

C.1. L/S station tracking messages contain a frequency field (C2) in addition to doppler and angles. C2 is a composite of the L/S bias frequency (INFREQ) and the transmitter VCO frequency (FREQ).

C.2. Let f_q = FREQ (calculated)

f_β = INFREQ (input)

C2 is truncated to a five-digit field. Define $7850000 \leq \hat{C2} \leq 7950000$

$$f_q = f_\beta - \frac{\hat{C2}}{5.0} = f_\beta + \frac{\hat{C2}}{CONST4}$$

f_q is then checked against an input FREQ:

1) If the station is on the atomic standard and it is in lock, the test is:

$$|f_q - FREQ| < CONST5 \text{ (nominally 0.4)}$$

2) If the station is on the crystal oscillator (or the atomic standard is out-of-lock), the test is:

$$|f_q - FREQ| < CONST6 \text{ (nominally 2.0)}$$

The accompanying flow chart (Figure C1) shows the logic performed when control card input is made and when one or another of the required quantities is missing. In the figure the nominal values for the constants are:

CONST1 = 50000 (FIXED PT)
CONST2 = 100000 (FIXED PT)
CONST3 = 7800000 (FIXED PT)
CONST5 = 0.4 (FLOATING PT)
CONST6 = 2.0 (FLOATING PT)

These quantities may be changed in the source deck (see Appendix A) if the test requirements or the computations change.

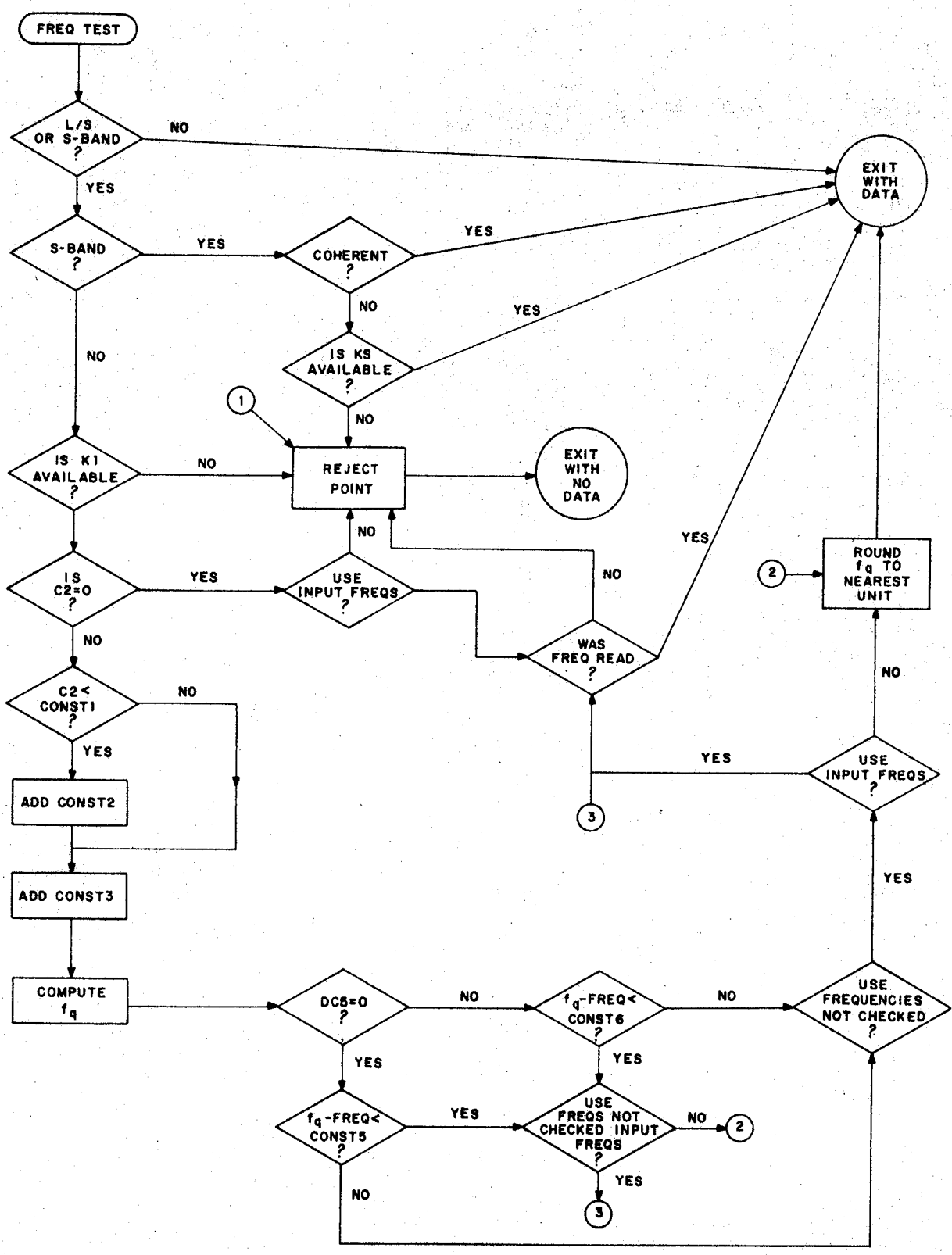

FIGURE C1. FREQUENCY CHECKS IN THE ODG

APPENDIX D

DOPPLER BIAS STRIPPING

D.1. L-BAND

For L-band data, bias may be stripped only as a constant.

OBS = observed value.

1-Way:

C1 = OBS-LIBIAS

2-Way or coherent 3-Way:

CC3 = OBS-L2BIAS

3-Way:

C3 = OBS-L3BIAS

Nominally,

L1BIAS = 0.0
L2BIAS = 1.0E5
L3BIAS = 0.0

These numbers are in double precision and may be changed in the source deck.

D.2. S-BAND

$$C1 = OBS-(K_s \times CON1-f_t + CON5)$$

$$CC3 = OBS-CON5$$

$$C3 = OBS-\left[(K_s - f_q) \times CON1 + CON5)\right]$$

D.3. L/S-BAND

$$C1 = OBS-(K_1 \times CON3 + CON6 - f_t) \times CON4$$

$$CC3 = OBS-(K_1 \times CON3 + CON6 - f_q \times CON1) \times CON4$$

$$C3 = OBS-(K_1 \times CON3 + CON6 - f_q \times CON1) \times CON4$$

In the above equations the following definitions hold:

OBS = biased observable

K_s = SYNFRQ = receiver reference VCO frequency

K_1 = INFREQ = L/S receiver bias frequency

f_t = FREQ = transponder reference frequency

f_q = FREQ = transmitter reference VCO frequency

$$CON1 = \frac{96.0 \times 240.0}{221.0}$$

CON2 = 30.0

CON3 = 96.0

$$CON4 = \frac{30.0}{96.0}$$

CON5 = 1.0E6

CON6 = 3.0E7

CON1 through CON6 are stored in double precision and may be changed through the source deck.

APPENDIX E

DOPPLER COMPRESSION IN THE ODG

E.1. Continuous count doppler is compressed across one or more sample intervals by differencing. Division by the time interval gives an equivalent frequency value for that time interval. As the time interval increases the truncation error decreases. For example, if doppler sampled at one-second intervals is differenced across one sample time, an uncertainty of one cycle per second results. If it is differenced across 10 sample times (10 seconds) the uncertainty is decreased to 0.1cps. Doppler may be compressed to any multiple of the sample rate up to 1023 seconds. This limit is imposed because of a limit on the number of bits of count time information which may be stored on the ODP File (10 bits). In order to compress over one or more sample times, the following conditions must hold for all points in the time interval:

1) Doppler must be monotone increasing

2) Transmitting station must be the same

3) Ground mode must be the same

4) Transmitter frequency must be the same

5) Sample interval must be the same

6) Requested count interval must not change

As an example, if the Station I sample rate is 60 seconds, the cards

SAMPLE TIME 60, STATION I

COUNT TIME 600, STATION I

will cause continuous doppler from Station I to be compressed to a maximum of 600 seconds; it may be compressed to any other multiple of 60 seconds less than 600 seconds if conditions 1-6 above do not hold uniformly over the data span. As a rule, some data must be lost if all the conditions do not hold uniformly. However, the program does the best it can. Doppler that cannot be compressed is not totaled anywhere in the ODG summary prints.

If a SAMPLE card is read without a COUNT card, the count time will be set equal to the sample time. If a COUNT card is read without a SAMPLE card, the program will compute the sample interval and use the COUNT as a maximum compression interval, unless the computed sample interval is greater than the count time in which case the count time will again be set equal to the sample interval. The program will not compress over a computed sample interval greater than 60 seconds.

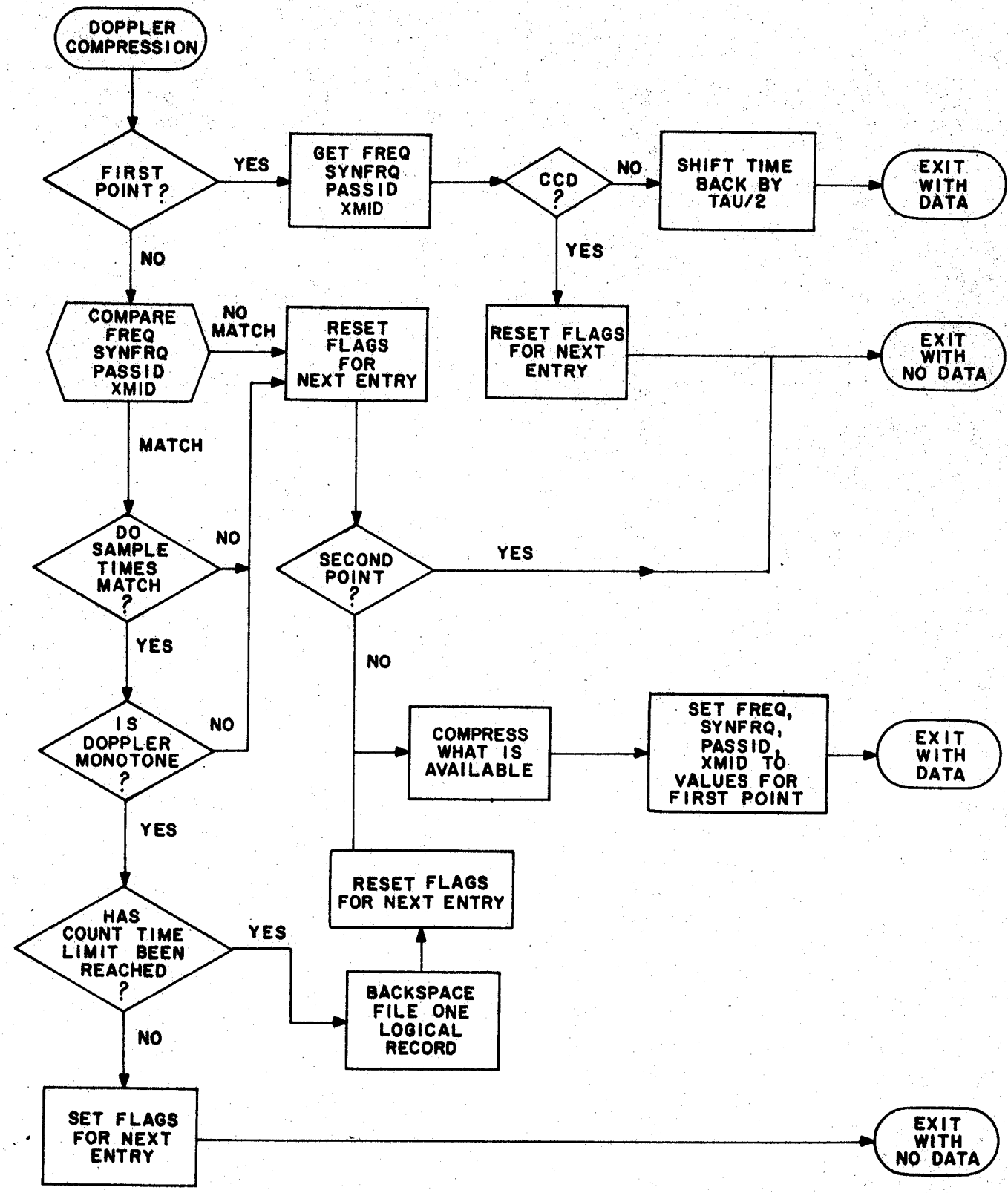

FIGURE E1. DOPPLER COMPRESSION

APPENDIX F

ANGLE PROCESSING IN THE ODG

F.1. Angle Corrections in the ODG

Corrections to the angle pairs from DSIF Stations 41 and 51 are normally made in the ODG. These corrections are intended to reduce the pointing errors in the angle observations. Refraction corrections are made in the ODP.

F.1.1. Angle Correction Polynomials

The general form of the correction equation is that of a 2nth degree polynomial in HA and DEC:

$$\delta(HA) = \sum_{i,j} A_{ij} (HA)^i (DEC)^j, \quad i,j=0,\ldots,n$$

and

$$\delta(DEC) = \sum_{i,j} B_{ij} (DEC)^i (HA)^j, \quad i,j=0,\ldots,n$$

Define:

$$(HA)_C = (HA)_A - \delta(HA)$$

$$(DEC)_C = (DEC)_A - \delta(DEC)$$

A = Apparent

C = Corrected

Coefficients are stored in the program corresponding to n=4

The coefficients used are:

Station 41

A_{00}	= 1.319021E-2	B_{00}	= 7.4519889E-2
A_{01}	= 5.45289422E-4	B_{01}	= 1.34214922E-4
A_{02}	= 2.48249580E-6	B_{02}	= -1.41108901E-5
A_{03}	= 2.24566914E-7	B_{03}	= 0.0
A_{10}	= 9.5974100E-6	B_{10}	= -5.7615403E-4
A_{11}	= 8.69584098E-6	B_{11}	= 3.34771543E-6

Station 41 (Cont'd)

A_{12}	= -6.52074417E-7	B_{12}	= 1.01895206E-7
A_{13}	= -1.59490382E-8	B_{13}	= 0.0
A_{20}	= -1.5262404E-6	B_{20}	= -1.7448991E-5
A_{21}	= -7.89511508E-8	B_{21}	= 4.53942058E-9
A_{22}	= -7.04116079E-9	B_{22}	= 2.09578021E-9
A_{23}	= -1.23595449E-10	B_{23}	= 0.0
A_{30}	= -5.4803092E-8	B_{30}	= -5.4803092E-8
A_{31}	= 1.90513748E-9	B_{31}	= 0.0
A_{32}	= 3.95248319E-10	B_{32}	= 0.0
A_{33}	= 9.57751208E-12	B_{33}	= 0.0

Station 51

A_{00}	= 5.6972719E-2	B_{00}	= 3.0633127E-2
A_{01}	= 1.58528433E-4	B_{01}	= 1.04434590E-4
A_{02}	= 6.24530962E-6	B_{02}	= 3.6495579E-6
A_{03}	= 3.43842729E-7	B_{03}	= 2.0183882E-7
A_{10}	= -5.1692189E-4	B_{10}	= 1.9501239E-5
A_{11}	= 9.36369950E-6	B_{11}	= 4.55037975E-6
A_{12}	= -3.41913978E-7	B_{12}	= -9.45727640E-8
A_{13}	= -3.76659061E-9	B_{13}	= -7.12650861E-9
A_{20}	= -3.3287700E-7	B_{20}	= -9.7176758E-6
A_{21}	= -1.03537453E-8	B_{21}	= 5.89778738E-8
A_{22}	= -3.04187273E-9	B_{22}	= 3.62801844E-9
A_{23}	= -1.52368379E-11	B_{23}	= -5.16572982E-11
A_{30}	= 6.1221653E-8	B_{30}	= -1.0465099E-8
A_{31}	= 6.22450846E-10	B_{31}	= 0.0
A_{32}	= 1.79924034E-10	B_{32}	= 0.0
A_{33}	= 3.31402952E-12	B_{33}	= 0.0

F.2. Rejection of Angle Pairs by Elevation Angle Constraints

DSIF angle pairs are ignored when the observations fall outside an elevation angle constraint. The minima and maxima stored in the program for each station are given in Appendix A.

For AZ-EL stations, direct comparison with the elevation angle (EL) determines the validity of the angle pair. For HA-DEC stations, the elevation angle must be computed. If one angle is missing, no check is possible. The ODG computes an approximation to sin (EL) which is dependent only on the angle pair and the latitude of the station. This is only a gross approximation but it serves its purpose in the ODG. The approximation to sin (EL) is:

$$\text{Sin (EL)} = \cos(\text{HA})\cos(\text{DEC})\cos\Phi + \sin(\text{DEC})\sin\Phi$$

where:

Φ = geodetic latitude of the station.

Nominal values for Φ are stored in the program as sines and cosines.

Sin Φ and cos Φ:

Station	Sin Φ	Cos Φ
1	0.0	0.0
2	0.57913178	0.81523394
3	0.57913178	0.81523394
4	-0.52075428	0.85370661
5	-0.43660334	0.89966411
6-15	0.0	0.0

These constants cannot be changed except by program reassembly or octal correction in the source deck. Symbols will be defined as SINL and COSL in a later version of the ODG; these symbols will be used in the same way as MAXEL and MINEL (see Appendix A).

APPENDIX G

OPTION SWITCH USAGE IN THE ODG

G.1. A limited amount of control is afforded by the use of the option switches. In Mode IV, the option switches are simulated by the keys on the 7094 console. In the event that the ODG requests option switches in Mode IV, the keys should be set and then the sign key should be entered. Raise the sign key immediately after entering it.

Option Switch	
1	Defeat card read if entered before card reader is selected.
2	Suppress printing on-line of acceptable data and angle corrections.
3	Suppress printing on-line of frequency check failures.
4	Suppress printing on-line of transmitter errors.
10	Restore ODP File from tape. This switch should be entered while the program is in Link 1 if the program is running saved. If the program is starting fresh and a control card was not read defining ODP File action, the program will pause and ask for Option Switch 10 or 11.
11	Make a new ODP File. Effective only if the program requests it.
32, 33	Used in the switch loop entered during an ODG pause. If OS32 is entered, FINSYS will be called. OS33 will cause the program to abort. If the switches were entered before the program requested switches, they will have no effect unless reentered. The program checks OS32 before it checks OS33.

APPENDIX H

SAMPLES OF VALID ODG CONTROL CARDS

NOTES

1. THE YEAR FIELD MAY BE DROPPED IF IT IS THE SAME AS CURRENT YEAR.

2. ANY NUMBER OF STATIONS MAY BE REFERENCED ON A CONTROL CARD, EXCEPT TRANSMITTER.

3. CHANGE CARDS MAY BE STACKED ON ONE CARD IF THEY DO NOT CONTAIN THE WORD 'STATION' INTERNALLY. EXAMPLE-
CHANGE USE FREQUENCIES NOT CHECKED INPUT FREQUENCY

4. ALL CONTROL WORDS MUST BEGIN IN COLUMN 1 WITH THE NEXT FIELD NOT BEGINNING BEFORE COLUMN 7

5. THE FOLLOWING WORDS MAY BE USED FOR CLARITY OR OMITTED
RESTORE, REMAKE, RECOVER, RECLAIM, REFURBISH, REPLACE, USE, FROM TAPE, ITTER ON.

6. XXX MAY BE R, DR, EL, AZ, C1, CC3, C3, RU, DEC, HA, DOPPLER, ANGLES. COUNTER 1 OR COUNTER 2 MAY BE PREFIXED, IF DESIRED.

7. I MAY BE ANY NUMBER FROM 1 TO 14.

8. THE WORD 'STATIONS' MAY BE USED IN PLACE OF 'STATION'

CHANGE *******

CHANGE NO DOPPLER NOT IN AUTO TRACK
CHANGE NO ANGLE CORRECTIONS
CHANGE USE ONLY CHECKED FREQUENCIES
CHANGE USE FREQUENCIES NOT CHECKED
CHANGE USE INPUT FREQUENCIES
CHANGE USE INPUT FREQUENCY
CHANGE USE DC2 MANUAL DATA
CHANGE NEW ODP FILE
CHANGE NO ODP FILE
CHANGE READ MORE CARDS
CHANGE ODP FILE
CHANGE EXECUTE
CHANGE EPOCH 120000,347,64, STATION I
CHANGE MINIMUM ELEVATION ANGLE 13.4, STATION I
CHANGE MAXIMUM ELEVATION ANGLE 87.2, STATION I
CHANGE RATE 9, STATION I

WEIGHT *******

WEIGHT XXX DATA TYPE 314330, STATION I
WEIGHT COUNTER 1 XXX DATA 313443, STATION I
WEIGHT XXX TYPE 111111, BEFORE 120000, 47, 63, STATION I
WEIGHT XXX DT 312100, AFTER 060000, 128, 67, STATION I
WEIGHT XXX DT 121300, FROM 010000, 129, 66, TO 020002, 129, STATION I
WEIGHT XXX DT 121300, AT 010102, 129, STATION I

```
COUNT *******

COUNT TIME 60, STATION I
COUNT TIME 180,BEFORE 000000,242,62, STATION I
COUNT TIME 600,AFTER 000000,242,62, STATION I
COUNT TIME 10,FROM 214602,107, TO 223642,107, STATION I

SAMPLE *******

SAMPLE TIME 60, STATION I
SAMPLE TIME 10,BEFORE 100000,313,64, STATION I
SAMPLE TIME 20,AFTER 120002,316, STATION I
SAMPLE TIME 1,FROM 010101,316, TO 010101,319, STATION I

FREQ *******
SYNFRQ *******

FREQ 20492120, STATION I
SYNFRQ 20492115,BEFORE 020202,316, STATION I
SYNFRQ 20397250,AFTER 030303,319, STATION I
FREQ 30726720,AFTER 040404,319, BEACON
FREQ 20396514 FROM 020000,316,65, TO 120001,316,65, STATION I

L TO S *******
INFRQ *******
INFREQ *******

L TO S BIAS 74631820, STATION I
L TO S BIAS 74631820,BEFORE 000000,316, STATION I
INFRQ BIAS 74631820,AFTER 010000,316, STATION I
INFREQ BIAS 74631820,FROM 000000,316, TO 010000,316, STATION I

TRANSM *******

TRANSMITTER ON ,STATION I
TRANSMITTER ON BEFORE 010000,316, BEACON
TRANSMITTER ON AT 020000,316,65, STATION I

IGNORE *******

      NOTE-FOR IGNORES,IF XXX IS OMITTED,ALL DATA TYPES WILL BE IGNORED

IGNORE STATION I
IGNORE XXX BEFORE 010000,316, STATION I
IGNORE XXX AFTER 010000,316,65, STATION I
IGNORE XXX AT 010002,316,65, STATION I
IGNORE XXX FROM 010000,316,65, TO 010000,319,65, STATION I

PASSID *******

PASSID 01316, STATION I
PASSID 01316,BEFORE 000000,317,65, STATION I
PASSID 01317,AFTER 000000,317,65, STATION I
```

```
PASSID 03131 FROM 000000,72,65, TO 000000,73,65, STATION I

PRINT *******

PRINT ALL CONTROLS
PRINT CONTROLS 2,17
PRINT CONTROL 2,17
PRINT IGNORES STATION I
PRINT PASSIDS STATION I
PRINT FREQUENCIES STATION I
PRINT TRANSMITTERS STATION I
PRINT COUNTS STATION I
PRINT SAMPLES STATION I
PRINT WEIGHTS STATION I

REMOVE *******

REMOVE ALL CONTROLS
REMOVE CONTROLS 2,17
REMOVE CONTROL 2,17
REMOVE IGNORES STATION I
REMOVE PASSIDS STATION I
REMOVE FREQUENCIES STATION I
REMOVE TRANSMITTERS STATION I
REMOVE COUNTS STATION I
REMOVE SAMPLES STATION I
REMOVE WEIGHTS STATION I
```

APPENDIX I

FORMAT OF THE ODP FILE

I.1. ODP File Logical Record Format

The ODP File is written on disc starting at JPLODP+1001

Word	Contents
0	D = Number of words in logical record
1-2	Floating point double precision Seconds past 1950.0 MSP of time in Word 1 LSP of time in Word 2
3	Frequency increment (floating point)
4	Pass ID (BCD)
5	Code word
6	Observable No. 1 (floating point)
7	Weight code word
8-9, 10-11, etc.	Succeeding observables occur in pairs with associated weight code words; as many pairs occur as there are bits in the code word.

I.1.1. Format of Code Word

Bit: S 1 15 16 17 18 21 22 25 26 35

b d d d d d d d d d d n d n n n n b a x x x x r r r r t t t t t t t t t

a) If bits S and 16 are 0, doppler is L-band;
If bits S and 16 are 1, doppler is L/S-band;
If bit S is 0 and 16 is 1, doppler is S-band.

b) If bit d_i = 1, then data type i appears in the logical record.

Bit Number	Data Type
1	Range (R)
2	Range Rate (DR)
3	Elevation (EL)
4	Azimuth (AZ)

Bit Number	Data Type
5	Declination (DEC)
6	Hour Angle (HA) or Right Ascension (RA)
7	One-Way Doppler (C1)
8	Two-way Doppler (CC3 or C2)
9	Three-Way Doppler (C3)
10	Not Used
11	Range Units (RU)

c) Bits 12 through 15 are not used

d) If a = 0, Bit 5 corresponds to hour angle
If a = 1, Bit 5 corresponds to right ascension

e) xxxx is the transmitter ID (internal)

f) rrrr is the receiver ID (internal)

g) tttttttttt is the doppler averaging time (must be less than 1024 seconds).

I.1.2. Format of Weight Code Word

Bit:	S-2	3-5	6-8	9-11	12-14	15-17	18-20	21-35
	D_1	D_2	D_3	D_4	D_5	D_6		t_s

a. The D_i are indices for a priori weighting by table look-up.

b. Bits 18-20 are not used

c. t_s is the data type sample interval

I.2. The ODP File summaries are stored in JPLTDP. They are written after each ODP File update. The summaries are listed by data type and station.

Number of words written:

$$(437)_8 = (287)_{10}$$

Two records are written on disc in reverse order by DCP (200-word records are used):

Record No. 1 = JPLTDP + 7899

Record No. 2 = JPLTDP + 7898

Information is stored forward within each record. When the records are reversed in core, information is:

Words 1-30: Double precision last time for each station (stored backward)

Words 31-287: ODP File summaries stored backwards as BSS type storage

The File summaries are (starting backwards from "SUM" = Word 287):

SUM-17 = No. of data type 1 observables for Station 1

SUM-16 = No. of data type 2 observables for Station 1

.

.

.

SUM-3 = No. of data type 15 observables for Station 1

SUM-2 = First data point time for Station 1

SUM-1 = Last data point time for Station 1

SUM-2 x 17 = No. of data type 1 observables for Station 2.

Continue similarly for 15 stations.

APPENDIX J

ODG DISC ALLOCATION

J.1. General

This appendix describes the allocation of ODG Disc Storage.

J.2. JPLTDQ (The "SCROD" File)

JPLTDQ is a block of 1000 records on Module 1 of the Disc File. It is used for scratch storage by the ODG (and TDP). When data is to be merged onto the ODP File, the ODP File is transferred to the SCROD File and the data streams are merged back onto the ODP File. This merge is necessary whenever new data is to be added to the ODP File that has times earlier than the last time on the ODP File.

J.3. JPLODP

JPLODP is a block of 2000 records assigned to the ODP. The ODP File is written starting in JPLODP + 1001. The ODP File may never be longer than 1000 records. Since the SCROD file contains 1000 records, the size of the ODP File is not limited by the size of the SCROD File. The total number of points possible on the ODP File is variable since the size of the logical records on the File is variable. Assuming only one observable per logical record, the maximum number of points is 25,000. Only 200 words are written on each 225-word disc record.

J.4. JPLTDP

JPLTDP is a block of 8234 records on Module 3 of the disc. It contains a number of different logical files:

Record	Contents
1-3000	MASTER FILE 1
3001	MASTER FILE 1 STATION SUMMARIES
3002	MASTER FILE 2 STATION SUMMARIES
3003-6002	MASTER FILE 2
6003-6202	CONTROL TABLE FOR FILE 1
6203-6402	CONTROL TABLE FOR FILE 2
6403-7897	UNUSED
7898-7899	ODP FILE SUMMARIES
7900-8099	(USED BY TDP)
8100-8234	INPUT BUFFER FOR CONTROL CARDS (SHARED WITH THE TDP ALLOCATION)

APPENDIX K - SAMPLE ODG OUTPUT

```
                    CURRENT STATUS OF MASTER FILE ONE

                CURRENT MISSION    MC2-01 ,S/C ID= 02 ,GMT OF EPOCH   641101700,0000000

MASTER FILE DATA SUMMARY. STA COUNT  HHMMSS,DAY TO HHMMSS,DAY  ELAPSED HHMMSS,DAYS     TIMES IN SECONDS    ELAPSED
                          4  3964  161712 322    222452 323          060740    1    58632.0  167092.0  108460.0
                          5  1197  124339 322    165622 322          041243    0    45819.0   60982.0   15163.0


                    CURRENT STATUS OF MASTER FILE TWO

                CURRENT MISSION    MC3-01 ,S/C ID= 03 ,GMT OF EPOCH   641102800,0000000

MASTER FILE DATA SUMMARY. STA COUNT  HHMMSS,DAY TO HHMMSS,DAY  ELAPSED HHMMSS,DAYS     TIMES IN SECONDS    ELAPSED
                          2   610  064602 334    183402 334          114800    0   110762.0  153242.0   42480.0
                          4   964  151232 333    192640 334          041408    1    54752.0  156400.0  101648.0
                          5   556  202952 333    020802 335          053810    1    73792.0  180482.0  106690.0
                         10   467  150912 333    155642 333          004730    0    54552.0   57402.0    2850.0

                    ODG-ORBIT DATA GENERATOR-NOW OPERATING
 ODG OPERATING ON 11/29/64, AT 00 00 00, ON COMPUTER 8

                CURRENT MISSION    MC3-01 ,S/C ID= 03 ,GMT OF EPOCH   641102800,0000000

MASTER FILE DATA SUMMARY. STA COUNT  HHMMSS,DAY TO HHMMSS,DAY  ELAPSED HHMMSS,DAYS     TIMES IN SECONDS    ELAPSED
                          2   610  064602 334    183402 334          114800    0   110762.0  153242.0   42480.0
                          4   964  151232 333    192640 334          041408    1    54752.0  156400.0  101648.0
                          5   556  202952 333    020802 335          053810    1    73792.0  180482.0  106690.0
                         10   467  150912 333    155642 333          004730    0    54552.0   57402.0    2850.0
  PLEASE READY CONTROL CARDS IN READER  ***ODG
REMOVE ALL CONTROLS                                                  CARD NO.  1 REMOVE TYPE CONTROL CARD.
CHANGE READ MORE CARDS                                               CARD NO.  2 CHANGE TYPE CONTROL CARD.
ENTER SWITCHES.33 ABORTS,32 CALLS FINSYS.OTHERWISE,PROGRAM_CONTINUES.
  PLEASE READY CONTROL CARDS IN READER  ***ODG
CHANGE MINIMUM ELEVATION ANGLE 17.,STATION 4,5                       CARD NO.  3 CHANGE TYPE CONTROL CARD.
L TO S BIAS 36242000 STATIONS 4,5                                    CARD NO.  4 L TO S TYPE CONTROL CARD.
TRANSMITTER ON AT 153512,333,64,STATION 4                            CARD NO.  5 TRANSM TYPE CONTROL CARD.
FREQ   20390320 AFTER 153512,333,64,STATION 4                        CARD NO.  6 FREQ   TYPE CONTROL CARD.
FREQ  20389180 AFTER 164602,333,64,STATION 4                         CARD NO.  7 FREQ   TYPE CONTROL CARD.
FREQ   20388300 AFTER 211100 333 64 STATION 4                        CARD NO.  8 FREQ   TYPE CONTROL CARD.
FREQ  20388250 AFTER 224600,333,64,STATION 4                         CARD NO.  9 FREQ   TYPE CONTROL CARD.
TRANSMITTER ON AT 233037,333,64,STATION 4                            CARD NO. 10 TRANSM TYPE CONTROL CARD.
SYNFRQ 20388300 AFTER 233037,333,64,STATION 4                        CARD NO. 11 SYNFRQ TYPE CONTROL CARD.
TRANSMITTER ON AT 153202,334,64,STATION 4                            CARD NO. 12 TRANSM TYPE CONTROL CARD.
FREQ  20387450 AFTER 153202,334,64,STATION 4                         CARD NO. 13 FREQ   TYPE CONTROL CARD.
TRANSMITTER ON AT 173300,334,64,STATION 4                            CARD NO. 14 TRANSM TYPE CONTROL CARD.
FREQ  20387700 AFTER 173300,334,64,STATION 4                         CARD NO. 15 FREQ   TYPE CONTROL CARD.
TRANSMITTER ON AFTER 230130,333,64,STATION 5                         CARD NO. 16 TRANSM TYPE CONTROL CARD.
FREQ  20387790 AFTER 230000,333,64,STATION 5                         CARD NO. 17 FREQ   TYPE CONTROL CARD.
TRANSMITTER ON AFTER 000000,334,64,STATION 5                         CARD NO. 18 TRANSM TYPE CONTROL CARD.
FREQ  20387800 AFTER 000000,334,64,STATION 5                         CARD NO. 19 FREQ   TYPE CONTROL CARD.
TRANSMITTER ON AT 223000,334,64,STATION 5                            CARD NO. 20 TRANSM TYPE CONTROL CARD.
FREQ   20387600 AFTER 223000,334,64,STATION 5                        CARD NO. 21 FREQ   TYPE CONTROL CARD.
TRANSMITTER ON AFTER 073300,334,64,STATION 2                         CARD NO. 22 TRANSM TYPE CONTROL CARD.
FREQ  20387700 AFTER 073300,334,64,STATION 2                         CARD NO. 23 FREQ   TYPE CONTROL CARD.
SYNFRQ 20387870 AFTER 153500,334,64,STATION 2                        CARD NO. 24 SYNFRQ TYPE CONTROL CARD.
TRANSMITTER ON AT 163125,334,64,STATION 2                            CARD NO. 25 TRANSM TYPE CONTROL CARD.
FREQ  20387920 AFTER 163125,334,64,STATION 2                         CARD NO. 26 FREQ   TYPE CONTROL CARD.
PASSID 01333 BEFORE 155330,333,64,STATION 4                          CARD NO. 27 PASSID TYPE CONTROL CARD.
PASSID 02333 AFTER 155330,333,64,STATION 4                           CARD NO. 28 PASSID TYPE CONTROL CARD.
PASSID 03333 AFTER 232925,333,64,STATION 4                           CARD NO. 29 PASSID TYPE CONTROL CARD.
PASSID 02334 AFTER 170000,334,64,STATION 4                           CARD NO. 30 PASSID TYPE CONTROL CARD.
PASSID 01333 STATION 5                                               CARD NO. 31 PASSID TYPE CONTROL CARD.
```

PASSID 01334 AFTER 235925,333,64,STATION 5	CARD NO. 32 PASSID TYPE CONTROL CARD.
PASSID 01334 AFTER 060000,334,64,STATION 2	CARD NO. 33 PASSID TYPE CONTROL CARD.
PASSID 02334 AFTER 163125,334,64,STATION 2	CARD NO. 34 PASSID TYPE CONTROL CARD.
SAMPLE TIME 10 FROM 215402,333,64, TO 224002,333,64, STATION 5	CARD NO. 35 SAMPLE TYPE CONTROL CARD.
SAMPLE TIME 60 AFTER 224003,333,64,STATION 5	CARD NO. 36 SAMPLE TYPE CONTROL CARD.
SAMPLE TIME 60 AFTER 060000,334,64, STATION 2	CARD NO. 37 SAMPLE TYPE CONTROL CARD.
SAMPLE TIME 10 AFTER 121900,334,64,STATION 2	CARD NO. 38 SAMPLE TYPE CONTROL CARD.
SAMPLE TIME 60 AFTER 125600,334,64, STATION 2	CARD NO. 39 SAMPLE TYPE CONTROL CARD.
SAMPLE TIME 10 BEFORE 155330,333,64,STATION 4	CARD NO. 40 SAMPLE TYPE CONTROL CARD.
SAMPLE TIME 60 AFTER 155400,333,64,STATION 4	CARD NO. 41 SAMPLE TYPE CONTROL CARD.
COUNT TIME 10 BEFORE 155330,333,64,STATION 4	CARD NO. 42 COUNT TYPE CONTROL CARD.
COUNT TIME 60 AFTER 155330,333,64,STATION 4	CARD NO. 43 COUNT TYPE CONTROL CARD.
COUNT TIME 600 AFTER 180702,333,64,STATION 4	CARD NO. 44 COUNT TYPE CONTROL CARD.
COUNT TIME 60 AFTER 060000,334,64,STATION 4	CARD NO. 45 COUNT TYPE CONTROL CARD.
COUNT TIME 600 BEFORE 060000,334,64,STATION 5	CARD NO. 46 COUNT TYPE CONTROL CARD.
COUNT TIME 60 AFTER 060000,334,64,STATION 5	CARD NO. 47 COUNT TYPE CONTROL CARD.
COUNT TIME 60 STATION 2	CARD NO. 48 COUNT TYPE CONTROL CARD.
IGNORE DOPPLER FROM 163700,334,64, TO 173000,334,64,STATION 4	CARD NO. 49 IGNORE TYPE CONTROL CARD.
IGNORE BEFORE 153500,333,64, STATION 4	CARD NO. 50 IGNORE TYPE CONTROL CARD.
IGNORE ANGLES AT 223622,333,64, STATION 4	CARD NO. 51 IGNORE TYPE CONTROL CARD.
IGNORE ANGLES STATIONS 2,4,5	CARD NO. 52 IGNORE TYPE CONTROL CARD.
IGNORE C1 STATION 2	CARD NO. 53 IGNORE TYPE CONTROL CARD.
IGNORE C1 STATIONS 4,5	CARD NO. 54 IGNORE TYPE CONTROL CARD.
IGNORE AT 030302,334,64,STATION 5	CARD NO. 55 IGNORE TYPE CONTROL CARD.
IGNORE AT 030402,334,64,STATION 5	CARD NO. 56 IGNORE TYPE CONTROL CARD.
IGNORE AT 030502,334,64,STATION 5	CARD NO. 57 IGNORE TYPE CONTROL CARD.
IGNORE AT 033202,334,64,STATION 5	CARD NO. 58 IGNORE TYPE CONTROL CARD.
IGNORE AT 033302,334,64,STATION 5	CARD NO. 59 IGNORE TYPE CONTROL CARD.
IGNORE AT 033402,334,64,STATION 5	CARD NO. 60 IGNORE TYPE CONTROL CARD.
IGNORE AT 033602,334,64,STATION 5	CARD NO. 61 IGNORE TYPE CONTROL CARD.
IGNORE AT 033702,334,64,STATION 5	CARD NO. 62 IGNORE TYPE CONTROL CARD.
IGNORE AT 033802,334,64,STATION 5	CARD NO. 63 IGNORE TYPE CONTROL CARD.
IGNORE AT 044902,334,64,STATION 5	CARD NO. 64 IGNORE TYPE CONTROL CARD.
IGNORE AT 045102,334,64,STATION 5	CARD NO. 65 IGNORE TYPE CONTROL CARD.
IGNORE AT 023602,334,64,STATION 5	CARD NO. 66 IGNORE TYPE CONTROL CARD.
IGNORE AT 231602,333,64,STATION 5	CARD NO. 67 IGNORE TYPE CONTROL CARD.
IGNORE AT 231702,333,64,STATION 5	CARD NO. 68 IGNORE TYPE CONTROL CARD.
IGNORE AT 231802,333,64,STATION 5	CARD NO. 69 IGNORE TYPE CONTROL CARD.
IGNORE AT 023502,334,64,STATION 5	CARD NO. 70 IGNORE TYPE CONTROL CARD.
IGNORE STATION 10	CARD NO. 71 IGNORE TYPE CONTROL CARD.

CONTROL NUMBER	1	L TO S BIAS 3624200.0	FROM INJECTION	TO END OF MISSION	STATION 4
CONTROL NUMBER	2	L TO S BIAS 3624200.0	FROM INJECTION	TO END OF MISSION	STATION 5
CONTROL NUMBER	3	PASSID 01333	FROM INJECTION	TO 155329,333,64	STATION 4
CONTROL NUMBER	4	PASSID 01333	FROM INJECTION	TO 235924,333,64	STATION 5
CONTROL NUMBER	5	SAMPLE TIME 10	FROM INJECTION	TO 155330,333,64	STATION 4
CONTROL NUMBER	6	COUNT TIME 10	FROM INJECTION	TO 155329,333,64	STATION 4
CONTROL NUMBER	7	COUNT TIME 600	FROM INJECTION	TO 055959,334,64	STATION 5
CONTROL NUMBER	8	COUNT TIME 60	FROM INJECTION	TO END OF MISSION	STATION 2
CONTROL NUMBER	9	IGNORE ALL DATA	FROM INJECTION	TO 153500,333,64	STATION 4
CONTROL NUMBER	10	IGNORE ANGLES C1	FROM INJECTION	TO END OF MISSION	STATION 2
CONTROL NUMBER	11	IGNORE ANGLES C1	FROM INJECTION	TO 231601,333,64	STATION 5
CONTROL NUMBER	12	IGNORE ALL DATA	FROM INJECTION	TO END OF MISSION	STATION10
CONTROL NUMBER	13	IGNORE ANGLES C1	FROM 153500,333,64	TO 163659,334,64	STATION 4
CONTROL NUMBER	14	TRANSMITTING	FROM 153512,333,64	TO 230129,333,64	STATION 4
CONTROL NUMBER	15	FREQUENCY 2039032.0	FROM 153512,333,64	TO 164601,333,64	STATION 4
CONTROL NUMBER	16	PASSID 02333	FROM 155330,333,64	TO 232924,333,64	STATION 4
CONTROL NUMBER	17	COUNT TIME 60	FROM 155330,333,64	TO 180701,333,64	STATION 4
CONTROL NUMBER	18	SAMPLE TIME 60	FROM 155400,333,64	TO END OF MISSION	STATION 4
CONTROL NUMBER	19	FREQUENCY 2038918.0	FROM 164602,333,64	TO 211059,333,64	STATION 4
CONTROL NUMBER	20	COUNT TIME 600	FROM 180702,333,64	TO 055959,334,64	STATION 4
CONTROL NUMBER	21	FREQUENCY 2038830.0	FROM 211100,333,64	TO 224559,333,64	STATION 4
CONTROL NUMBER	22	SAMPLE TIME 10	FROM 215402,333,64	TO 224002,333,64	STATION 5
CONTROL NUMBER	23	SAMPLE TIME 60	FROM 224003,333,64	TO END OF MISSION	STATION 5
CONTROL NUMBER	24	FREQUENCY 2038825.0	FROM 224600,333,64	TO 233036,333,64	STATION 4
CONTROL NUMBER	25	FREQUENCY 2038779.0	FROM 230000,333,64	TO 235959,333,64	STATION 5
CONTROL NUMBER	26	TRANSMITTING	FROM 230130,333,64	TO 233036,333,64	STATION 5
CONTROL NUMBER	27	IGNORE ALL DATA	FROM 231602,333,64	TO 231602,333,64	STATION 5
CONTROL NUMBER	28	IGNORE ANGLES C1	FROM 231602,333,64	TO 231701,333,64	STATION 5
CONTROL NUMBER	29	IGNORE ALL DATA	FROM 231702,333,64	TO 231702,333,64	STATION 5
CONTROL NUMBER	30	IGNORE ANGLES C1	FROM 231702,333,64	TO 231801,333,64	STATION 5
CONTROL NUMBER	31	IGNORE ALL DATA	FROM 231802,333,64	TO 231802,333,64	STATION 5
CONTROL NUMBER	32	IGNORE ANGLES C1	FROM 231802,333,64	TO 023501,334,64	STATION 5
CONTROL NUMBER	33	PASSID 03333	FROM 232925,333,64	TO 165959,334,64	STATION 4
CONTROL NUMBER	34	TRANSMITTING	FROM 233037,333,64	TO 235959,333,64	STATION 4
CONTROL NUMBER	35	FREQUENCY 2038830.0	FROM 233037,333,64	TO 153201,334,64	STATION 4
CONTROL NUMBER	36	PASSID 01334	FROM 235925,333,64	TO END OF MISSION	STATION 5
CONTROL NUMBER	37	TRANSMITTING	FROM 000000,334,64	TO 073259,334,64	STATION 5
CONTROL NUMBER	38	FREQUENCY 2038780.0	FROM 000000,334,64	TO 222959,334,64	STATION 5
CONTROL NUMBER	39	IGNORE ALL DATA	FROM 023502,334,64	TO 023502,334,64	STATION 5
CONTROL NUMBER	40	IGNORE ANGLES C1	FROM 023502,334,64	TO 023601,334,64	STATION 5
CONTROL NUMBER	41	IGNORE ALL DATA	FROM 023602,334,64	TO 023602,334,64	STATION 5
CONTROL NUMBER	42	IGNORE ANGLES C1	FROM 023602,334,64	TO 030301,334,64	STATION 5
CONTROL NUMBER	43	IGNORE ALL DATA	FROM 030302,334,64	TO 030302,334,64	STATION 5
CONTROL NUMBER	44	IGNORE ANGLES C1	FROM 030302,334,64	TO 030401,334,64	STATION 5
CONTROL NUMBER	45	IGNORE ALL DATA	FROM 030402,334,64	TO 030402,334,64	STATION 5

CONTROL NUMBER 46	IGNORE ANGLES C1	FROM 030402,334,64	TO 030501,334,64	STATION 5
CONTROL NUMBER 47	IGNORE ALL DATA	FROM 030502,334,64	TO 030502,334,64	STATION 5
CONTROL NUMBER 48	IGNORE ANGLES C1	FROM 030502,334,64	TO 033201,334,64	STATION 5
CONTROL NUMBER 49	IGNORE ALL DATA	FROM 033202,334,64	TO 033202,334,64	STATION 5
CONTROL NUMBER 50	IGNORE ANGLES C1	FROM 033202,334,64	TO 033301,334,64	STATION 5
CONTROL NUMBER 51	IGNORE ALL DATA	FROM 033302,334,64	TO 033302,334,64	STATION 5
CONTROL NUMBER 52	IGNORE ANGLES C1	FROM 033302,334,64	TO 033401,334,64	STATION 5
CONTROL NUMBER 53	IGNORE ALL DATA	FROM 033402,334,64	TO 033402,334,64	STATION 5
CONTROL NUMBER 54	IGNORE ANGLES C1	FROM 033402,334,64	TO 033601,334,64	STATION 5
CONTROL NUMBER 55	IGNORE ALL DATA	FROM 033602,334,64	TO 033602,334,64	STATION 5
CONTROL NUMBER 56	IGNORE ANGLES C1	FROM 033602,334,64	TO 033701,334,64	STATION 5
CONTROL NUMBER 57	IGNORE ALL DATA	FROM 033702,334,64	TO 033702,334,64	STATION 5
CONTROL NUMBER 58	IGNORE ANGLES C1	FROM 033702,334,64	TO 033801,334,64	STATION 5
CONTROL NUMBER 59	IGNORE ALL DATA	FROM 033802,334,64	TO 033802,334,64	STATION 5
CONTROL NUMBER 60	IGNORE ANGLES C1	FROM 033802,334,64	TO 044901,334,64	STATION 5
CONTROL NUMBER 61	IGNORE ALL DATA	FROM 044902,334,64	TO 044902,334,64	STATION 5
CONTROL NUMBER 62	IGNORE ANGLES C1	FROM 044902,334,64	TO 045101,334,64	STATION 5
CONTROL NUMBER 63	IGNORE ALL DATA	FROM 045102,334,64	TO 045102,334,64	STATION 5
CONTROL NUMBER 64	IGNORE ANGLES C1	FROM 045102,334,64	TO END OF MISSION	STATION 5
CONTROL NUMBER 65	PASSID 01334	FROM 060000,334,64	TO 163124,334,64	STATION 2
CONTROL NUMBER 66	SAMPLE TIME 60	FROM 060000,334,64	TO 121859,334,64	STATION 2
CONTROL NUMBER 67	COUNT TIME 60	FROM 060000,334,64	TO END OF MISSION	STATION 4
CONTROL NUMBER 68	COUNT TIME 60	FROM 060000,334,64	TO END OF MISSION	STATION 5
CONTROL NUMBER 69	TRANSMITTING	FROM 073300,334,64	TO 153201,334,64	STATION 2
CONTROL NUMBER 70	FREQUENCY 2038770.0	FROM 073300,334,64	TO 153459,334,64	STATION 2
CONTROL NUMBER 71	SAMPLE TIME 10	FROM 121900,334,64	TO 125559,334,64	STATION 2
CONTROL NUMBER 72	SAMPLE TIME 60	FROM 125600,334,64	TO END OF MISSION	STATION 2
CONTROL NUMBER 73	TRANSMITTING	FROM 153202,334,64	TO 163124,334,64	STATION 4
CONTROL NUMBER 74	FREQUENCY 2038745.0	FROM 153202,334,64	TO 173259,334,64	STATION 4
CONTROL NUMBER 75	FREQUENCY 2038787.0	FROM 153500,334,64	TO 163124,334,64	STATION 2
CONTROL NUMBER 76	TRANSMITTING	FROM 163125,334,64	TO 173259,334,64	STATION 2
CONTROL NUMBER 77	FREQUENCY 2038792.0	FROM 163125,334,64	TO END OF MISSION	STATION 2
CONTROL NUMBER 78	PASSID 02334	FROM 163125,334,64	TO END OF MISSION	STATION 2
CONTROL NUMBER 79	IGNORE ANGLES DOPPLER	FROM 163700,334,64	TO 173000,334,64	STATION 4
CONTROL NUMBER 80	PASSID 02334	FROM 170000,334,64	TO END OF MISSION	STATION 4
CONTROL NUMBER 81	IGNORE ANGLES C1	FROM 173000,334,64	TO END OF MISSION	STATION 4
CONTROL NUMBER 82	TRANSMITTING	FROM 173300,334,64	TO 222959,334,64	STATION 4
CONTROL NUMBER 83	FREQUENCY 2038770.0	FROM 173300,334,64	TO END OF MISSION	STATION 4
CONTROL NUMBER 84	TRANSMITTING	FROM 223000,334,64	TO END OF MISSION	STATION 5
CONTROL NUMBER 85	FREQUENCY 2038760.0	FROM 223000,334,64	TO END OF MISSION	STATION 5

```
PRINT ALL CONTROLS
CHANGE READ MORE CARDS
ENTER SWITCHES,33 ABORTS,32 CALLS FINSYS,OTHERWISE,PROGRAM CONTINUES.
ODG OPERATING ON 11/29/64, AT 19 29 30, ON COMPUTER B
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CARD NO. 72 PRINT TYPE CONTROL CARD.
CARD NO. 73 CHANGE TYPE CONTROL CARD.

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 ODG***LINK 2 NOW PROCESSING MISSION  3.
FILE SUMMARIES WERE NOT SAVED.ENTER SWITCH 11 TO REMAKE THE ODP FILE,
OR MOUNT ANOTHER TAPE AND ENTER SWITCH 10.
ENTER SWITCHES.33 ABORTS,32 CALLS FINSYS.OTHERWISE,PROGRAM CONTINUES.
FILE SUMMARIES WERE NOT SAVED.ENTER SWITCH 11 TO REMAKE THE ODP FILE,
OR MOUNT ANOTHER TAPE AND ENTER SWITCH 10.
ENTER SWITCHES.33 ABORTS,32 CALLS FINSYS.OTHERWISE,PROGRAM CONTINUES.
STATION  2 AT 074732,334  CC3  .49154500 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 074832,334  CC3  .49156800 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 074932,334  CC3  .49159200 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 075032,334  CC3  .49161717 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 075132,334  CC3  .49164333 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 075232,334  CC3  .49167067 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 075332,334  CC3  .49169916 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 075432,334  CC3  .49172850 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 075532,334  CC3  .49175933 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 075632,334  CC3  .49179093 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 075732,334  CC3  .49182367 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 075832,334  CC3  .49185766 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 075932,334  CC3  .49189250 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 080032,334  CC3  .49192867 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 080132,334  CC3  .49196567 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 080232,334  CC3  .49200383 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 080332,334  CC3  .49204333 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 080432,334  CC3  .49208350 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 080932,334  CC3  .49230150 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 081132,334  CC3  .49239633 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 081232,334  CC3  .49244516 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 081332,334  CC3  .49249516 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 081432,334  CC3  .49254616 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 081832,334  CC3  .49276100 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 081932,334  CC3  .49281733 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 082032,334  CC3  .49287467 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 082132,334  CC3  .49293317 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 082332,334  CC3  .49305300 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 082432,334  CC3  .49311467 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 082532,334  CC3  .49317716 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 082632,334  CC3  .49324083 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 082732,334  CC3  .49330550 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 082832,334  CC3  .49337117 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 082932,334  CC3  .49343800 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 083032,334  CC3  .49350550 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 083132,334  CC3  .49357433 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 083332,334  CC3  .49371500 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 083432,334  CC3  .49378666 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 083532,334  CC3  .49385967 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 083632,334  CC3  .49393333 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 083732,334  CC3  .49400833 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 083832,334  CC3  .49408400 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 084232,334  CC3  .49439766 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 084332,334  CC3  .49447833 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 084432,334  CC3  .49456033 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 084532,334  CC3  .49464317 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 084632,334  CC3  .49472683 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 084932,334  CC3  .49498433 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 085032,334  CC3  .49507200 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 085132,334  CC3  .49516083 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 085232,334  CC3  .49525050 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 085332,334  CC3  .49534117 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 085832,334  CC3  .49580883 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 091932,334  CC3  .49802883 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 092232,334  CC3  .49837866 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 092632,334  CC3  .49885733 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 092832,334  CC3  .49910183 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 092932,334  CC3  .49922550 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 093332,334  CC3  .49972833 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 093732,334  CC3  .50024450 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 094132,334  CC3  .50077416 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 094232,334  CC3  .50090833 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 094532,334  CC3  .50131666 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 094632,334  CC3  .50145416 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 094732,334  CC3  .50159249 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 094832,334  CC3  .50173183 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 094932,334  CC3  .50187182 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 100732,334  CC3  .50452249 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 100832,334  CC3  .50467683 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 100932,334  CC3  .50483166 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 101032,334  CC3  .50498749 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 101132,334  CC3  .50514383 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 101232,334  CC3  .50530083 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 101332,334  CC3  .50545883 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 101432,334  CC3  .50561716 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 101532,334  CC3  .50577633 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 101632,334  CC3  .50593616 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 101732,334  CC3  .50609666 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 101832,334  CC3  .50625800 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 101932,334  CC3  .50641983 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 102032,334  CC3  .50658233 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 102332,334  CC3  .50707383 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 102432,334  CC3  .50723916 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 102532,334  CC3  .50740483 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 102632,334  CC3  .50757133 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 102732,334  CC3  .50773850 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 102832,334  CC3  .50790616 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 102932,334  CC3  .50807466 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 103032,334  CC3  .50824349 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 103132,334  CC3  .50841317 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 103332,334  CC3  .50875416 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 103432,334  CC3  .50892567 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 103532,334  CC3  .50909767 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 103632,334  CC3  .50927033 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 105432,334  CC3  .51247533 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 105532,334  CC3  .51265866 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 105632,334  CC3  .51284233 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 105732,334  CC3  .51302666 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 105832,334  CC3  .51321133 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 105932,334  CC3  .51339649 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 110032,334  CC3  .51358233 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 110132,334  CC3  .51376849 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 110232,334  CC3  .51395516 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 110332,334  CC3  .51414216 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 110432,334  CC3  .51433000 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 110532,334  CC3  .51451816 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 110732,334  CC3  .51489566 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 110832,334  CC3  .51508516 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 110932,334  CC3  .51527517 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 112932,334  CC3  .51916166 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 113432,334  CC3  .52015666 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 113732,334  CC3  .52075783 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 113832,334  CC3  .52095883 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 113932,334  CC3  .52116016 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 114232,334  CC3  .52176583 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 114332,334  CC3  .52196833 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 114832,334  CC3  .52298500 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 114932,334  CC3  .52318899 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 115032,334  CC3  .52339350 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 115132,334  CC3  .52359816 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 115232,334  CC3  .52380283 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 115432,334  CC3  .52421350 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 115532,334  CC3  .52441899 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 115632,334  CC3  .52462483 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 115732,334  CC3  .52483100 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 115832,334  CC3  .52503716 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 120232,334  CC3  .52586433 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 120332,334  CC3  .52607150 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 121132,334  CC3  .52773583 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 121232,334  CC3  .52794483 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 121332,334  CC3  .52815367 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 121532,334  CC3  .52857183 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 121632,334  CC3  .52878116 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 122052,334  CC3  .52968950 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 122152,334  CC3  .52989950 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 122252,334  CC3  .53010949 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 122352,334  CC3  .53031966 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 122452,334  CC3  .53052966 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 122552,334  CC3  .53074016 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 123252,334  CC3  .53221383 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 130432,334  CC3  .53888199 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 130632,334  CC3  .53930100 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 130732,334  CC3  .53951016 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 130832,334  CC3  .53971933 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 130932,334  CC3  .53992850 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 131032,334  CC3  .54013733 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 131132,334  CC3  .54034600 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 132132,334  CC3  .54242466 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 132232,334  CC3  .54263149 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 132432,334  CC3  .54304450 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 132632,334  CC3  .54345683 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 132732,334  CC3  .54366283 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 132832,334  CC3  .54386850 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 132932,334  CC3  .54407383 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 133032,334  CC3  .54427883 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 133132,334  CC3  .54448400 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 133232,334  CC3  .54468833 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 133332,334  CC3  .54489300 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 133432,334  CC3  .54509700 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 133532,334  CC3  .54530100 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 133832,334  CC3  .54591100 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 134032,334  CC3  .54631650 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 134132,334  CC3  .54651866 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 134232,334  CC3  .54672050 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 140032,334  CC3  .55030116 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 140132,334  CC3  .55049682 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 140232,334  CC3  .55069200 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 140332,334  CC3  .55088682 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 140432,334  CC3  .55108133 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 140532,334  CC3  .55127533 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 140632,334  CC3  .55146900 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 140732,334  CC3  .55166216 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 140832,334  CC3  .55185516 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 140932,334  CC3  .55204733 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 141032,334  CC3  .55223950 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 141132,334  CC3  .55243099 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 141232,334  CC3  .55262216 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 141332,334  CC3  .55281283 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 141432,334  CC3  .55300316 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 141532,334  CC3  .55319317 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 141632,334  CC3  .55338249 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 141732,334  CC3  .55357133 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 141832,334  CC3  .55375983 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 141932,334  CC3  .55394799 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 142032,334  CC3  .55413567 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 142132,334  CC3  .55432266 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 142332,334  CC3  .55469549 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 142432,334  CC3  .55488133 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 142532,334  CC3  .55506650 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 142632,334  CC3  .55525117 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 142732,334  CC3  .55543566 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 142832,334  CC3  .55561916 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 145732,334  CC3  .56071533 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 145832,334  CC3  .56088233 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 145932,334  CC3  .56104883 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 150332,334  CC3  .56170833 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 150432,334  CC3  .56187166 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 150532,334  CC3  .56203432 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 150632,334  CC3  .56219617 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 150732,334  CC3  .56235766 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 150832,334  CC3  .56251850 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 150932,334  CC3  .56267849 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 151032,334  CC3  .56283783 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
STATION  2 AT 151132,334  CC3  .56299666 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 01/334
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STATION  2 AT 151332,334  CC3  .56331217 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 151432,334  CC3  .56346899 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 151532,334  CC3  .56362467 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 151632,334  CC3  .56378033 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 151732,334  CC3  .56393500 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 151832,334  CC3  .56408899 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 151932,334  CC3  .56424233 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
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STATION  2 AT 152232,334  CC3  .56469817 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 152332,334  CC3  .56484850 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  2 AT 153532,334  C3   .52084357 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 153832,334  C3   .52119507 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 153932,334  C3   .52131274 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 154032,334  C3   .52143024 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
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STATION  2 AT 154732,334  C3   .52225674 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 154832,334  C3   .52237523 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
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STATION  2 AT 155832,334  C3   .52356590 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
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STATION  2 AT 160132,334  C3   .52392457 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 160232,334  C3   .52404440 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 160332,334  C3   .52416424 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 160432,334  C3   .52428407 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
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STATION  2 AT 160732,334  C3   .52464391 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 160832,334  C3   .52476424 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 160932,334  C3   .52488424 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 161032,334  C3   .52500440 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
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STATION  2 AT 161332,334  C3   .52536523 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
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STATION  2 AT 161532,334  C3   .52560590 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 161632,334  C3   .52572624 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 161732,334  C3   .52584674 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 161832,334  C3   .52596724 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 161932,334  C3   .52608774 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 162032,334  C3   .52620824 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 01/334
STATION  2 AT 163832,334  CC3  .57390233 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038792.0 PASSID 02/334
STATION  2 AT 163932,334  CC3  .57399067 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038792.0 PASSID 02/334
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STATION  2 AT 164132,334  CC3  .57416416 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038792.0 PASSID 02/334
STATION  2 AT 164232,334  CC3  .57424966 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038792.0 PASSID 02/334
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STATION  2 AT 164832,334  CC3  .57474250 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038792.0 PASSID 02/334
STATION  2 AT 164932,334  CC3  .57482149 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038792.0 PASSID 02/334
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STATION  2 AT 165132,334  CC3  .57497650 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038792.0 PASSID 02/334
STATION  2 AT 165232,334  CC3  .57505250 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038792.0 PASSID 02/334
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STATION  2 AT 165932,334  CC3  .57555866 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038792.0 PASSID 02/334
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STATION  2 AT 170632,334  CC3  .57601766 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038792.0 PASSID 02/334
STATION  2 AT 170732,334  CC3  .57607950 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038792.0 PASSID 02/334
STATION  2 AT 170832,334  CC3  .57614017 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038792.0 PASSID 02/334
STATION  2 AT 173532,334  C3   .53613575 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
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STATION  2 AT 175732,334  C3   .53858942 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 175832,334  C3   .53869825 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 175932,334  C3   .53880692 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 180032,334  C3   .53891525 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 180132,334  C3   .53902341 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 180232,334  C3   .53913125 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 180332,334  C3   .53923875 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 180432,334  C3   .53934608 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
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STATION  2 AT 180632,334  C3   .53956025 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 180732,334  C3   .53966659 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 180832,334  C3   .53977275 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 180932,334  C3   .53987892 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 181032,334  C3   .53998441 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 181132,334  C3   .54008992 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 181232,334  C3   .54019509 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 181332,334  C3   .54029991 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 181632,334  C3   .54061259 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 181732,334  C3   .54071625 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 181832,334  C3   .54081975 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 181932,334  C3   .54092258 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 182032,334  C3   .54102558 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 182132,334  C3   .54112791 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 182232,334  C3   .54123025 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 182332,334  C3   .54133192 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 182432,334  C3   .54143359 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 182532,334  C3   .54153474 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 182632,334  C3   .54163558 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 182932,334  C3   .54193625 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 183032,334  C3   .54203609 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 183132,334  C3   .54213508 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 183232,334  C3   .54223425 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  2 AT 183332,334  C3   .54233275 05  TC= 60  TS= 60  W.C.= 314333  FREQ= 2038770.0 PASSID 02/334
STATION  4 AT 153517,333  CC3  .32752417 05  TC= 10  TS= 10  W.C.= 314333  FREQ= 2039032.0 PASSID 01/333
STATION  4 AT 153527,333  CC3  .32720617 05  TC= 10  TS= 10  W.C.= 314333  FREQ= 2039032.0 PASSID 01/333
STATION  4 AT 153537,333  CC3  .32688517 05  TC= 10  TS= 10  W.C.= 314333  FREQ= 2039032.0 PASSID 01/333
STATION  4 AT 153547,333  CC3  .32656417 05  TC= 10  TS= 10  W.C.= 314333  FREQ= 2039032.0 PASSID 01/333
STATION  4 AT 153557,333  CC3  .32624017 05  TC= 10  TS= 10  W.C.= 314333  FREQ= 2039032.0 PASSID 01/333
STATION  4 AT 153607,333  CC3  .32591717 05  TC= 10  TS= 10  W.C.= 314333  FREQ= 2039032.0 PASSID 01/333
STATION  4 AT 153617,333  CC3  .32559117 05  TC= 10  TS= 10  W.C.= 314333  FREQ= 2039032.0 PASSID 01/333
STATION  4 AT 153627,333  CC3  .32526517 05  TC= 10  TS= 10  W.C.= 314333  FREQ= 2039032.0 PASSID 01/333
STATION  4 AT 153637,333  CC3  .32493817 05  TC= 10  TS= 10  W.C.= 314333  FREQ= 2039032.0 PASSID 01/333
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STATION  4 AT 153657,333  CC3  .32428217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153707,333  CC3  .32395217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153717,333  CC3  .32362217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153727,333  CC3  .32329217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153737,333  CC3  .32296117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153747,333  CC3  .32263017 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153757,333  CC3  .32229817 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153807,333  CC3  .32196717 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153817,333  CC3  .32163417 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153827,333  CC3  .32130317 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153837,333  CC3  .32097017 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153847,333  CC3  .32063917 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153857,333  CC3  .32030617 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153907,333  CC3  .31997417 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153917,333  CC3  .31964217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153927,333  CC3  .31931117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153937,333  CC3  .31897917 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153947,333  CC3  .31864717 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 153957,333  CC3  .31831717 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154007,333  CC3  .31798617 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154017,333  CC3  .31765617 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154027,333  CC3  .31732617 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154037,333  CC3  .31699617 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154047,333  CC3  .31666717 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154057,333  CC3  .31633917 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154107,333  CC3  .31601117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154117,333  CC3  .31568317 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154127,333  CC3  .31535617 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154137,333  CC3  .31503017 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154147,333  CC3  .31470517 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
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STATION  4 AT 154207,333  CC3  .31405417 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154217,333  CC3  .31373117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154227,333  CC3  .31340817 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154237,333  CC3  .31308617 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154247,333  CC3  .31276417 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154257,333  CC3  .31244417 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154307,333  CC3  .31212317 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154317,333  CC3  .31180317 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154327,333  CC3  .31148617 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
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STATION  4 AT 154347,333  CC3  .31085117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
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STATION  4 AT 154407,333  CC3  .31021917 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154417,333  CC3  .30990617 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154427,333  CC3  .30959217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154437,333  CC3  .30927917 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154447,333  CC3  .30896817 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154457,333  CC3  .30865717 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154507,333  CC3  .30834817 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154517,333  CC3  .30803817 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154527,333  CC3  .30773017 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154537,333  CC3  .30742317 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154547,333  CC3  .30711717 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154557,333  CC3  .30681217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154607,333  CC3  .30650817 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154617,333  CC3  .30620417 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154627,333  CC3  .30590217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154637,333  CC3  .30560017 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154647,333  CC3  .30530117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154657,333  CC3  .30500017 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154707,333  CC3  .30470317 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154717,333  CC3  .30440417 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154727,333  CC3  .30410917 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154737,333  CC3  .30381217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
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STATION  4 AT 154747,333  CC3  .30351817 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154757,333  CC3  .30322517 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154807,333  CC3  .30293217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154817,333  CC3  .30264117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154827,333  CC3  .30235017 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154837,333  CC3  .30206117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154847,333  CC3  .30177117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154857,333  CC3  .30148417 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154907,333  CC3  .30119817 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154917,333  CC3  .30091317 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154927,333  CC3  .30062717 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154937,333  CC3  .30034417 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154947,333  CC3  .30006217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 154957,333  CC3  .29977917 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155007,333  CC3  .29949917 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155017,333  CC3  .29922017 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155027,333  CC3  .29894117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155037,333  CC3  .29866417 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155047,333  CC3  .29838717 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155057,333  CC3  .29811117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155107,333  CC3  .29783717 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155117,333  CC3  .29756317 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155127,333  CC3  .29729017 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155137,333  CC3  .29701917 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155147,333  CC3  .29674817 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155157,333  CC3  .29647817 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155207,333  CC3  .29621017 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155217,333  CC3  .29594217 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155227,333  CC3  .29567517 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155237,333  CC3  .29541017 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155247,333  CC3  .29514417 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155257,333  CC3  .29488117 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155307,333  CC3  .29461817 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155317,333  CC3  .29435617 05  TC=  10  TS= 10  W.C.= 314333  FREQ=  2039032.0 PASSID 01/333
STATION  4 AT 155327,333  CC3  .29409617 05  TC=  10  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID  NONE
STATION  4 AT 155432,333  CC3  .29242417 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 155532,333  CC3  .29091550 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 155632,333  CC3  .28944034 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 155732,333  CC3  .28799750 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 155832,333  CC3  .28658667 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 155932,333  CC3  .28520684 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 160032,333  CC3  .28385717 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 160132,333  CC3  .28253734 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 160232,333  CC3  .28124584 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 160332,333  CC3  .27998267 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 160432,333  CC3  .27874667 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 160532,333  CC3  .27753717 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 160632,333  CC3  .27635334 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 160732,333  CC3  .27519450 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 160832,333  CC3  .27406017 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 160932,333  CC3  .27294934 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 161032,333  CC3  .27186167 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
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STATION  4 AT 161232,333  CC3  .26975267 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 161332,333  CC3  .26873000 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 161432,333  CC3  .26772817 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 161532,333  CC3  .26674617 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 161632,333  CC3  .26578367 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 161732,333  CC3  .26484000 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 161832,333  CC3  .26391467 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 161932,333  CC3  .26300717 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 162032,333  CC3  .26211717 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 162132,333  CC3  .26124400 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 162232,333  CC3  .26038734 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 162332,333  CC3  .25954683 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 162432,333  CC3  .25872167 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
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STATION  4 AT 162532,333  CC3  .25791200 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 162632,333  CC3  .25711684 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 162732,333  CC3  .25633634 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 162832,333  CC3  .25556984 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 162932,333  CC3  .25481700 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 163032,333  CC3  .25407767 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 163132,333  CC3  .25335100 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 163232,333  CC3  .25263734 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2039032.0 PASSID 02/333
STATION  4 AT 165032,333  CC3  .24164873 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 165132,333  CC3  .24112673 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 165232,333  CC3  .24061273 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 165332,333  CC3  .24010690 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 165432,333  CC3  .23960857 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 165532,333  CC3  .23911773 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 165632,333  CC3  .23863423 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 165732,333  CC3  .23815807 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 165832,333  CC3  .23768873 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 165932,333  CC3  .23722657 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 170032,333  CC3  .23677107 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 170132,333  CC3  .23632223 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 170232,333  CC3  .23588007 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 170332,333  CC3  .23544390 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 170432,333  CC3  .23501457 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 170532,333  CC3  .23459090 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 170632,333  CC3  .23417357 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 170732,333  CC3  .23376190 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 170832,333  CC3  .23335640 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
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STATION  4 AT 171032,333  CC3  .23256190 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 171132,333  CC3  .23217306 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 171232,333  CC3  .23178957 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 171332,333  CC3  .23141140 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 171432,333  CC3  .23103840 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 171532,333  CC3  .23067040 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 171632,333  CC3  .23030773 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 171732,333  CC3  .22994973 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 171832,333  CC3  .22959657 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 171932,333  CC3  .22924823 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 172032,333  CC3  .22890473 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 172132,333  CC3  .22856557 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 172232,333  CC3  .22823123 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 172332,333  CC3  .22790090 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 172432,333  CC3  .22757540 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 172532,333  CC3  .22725373 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 172632,333  CC3  .22693673 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 172732,333  CC3  .22662357 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 172832,333  CC3  .22631457 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 172932,333  CC3  .22600973 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 173032,333  CC3  .22570873 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 173132,333  CC3  .22541173 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 173232,333  CC3  .22511823 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 173332,333  CC3  .22482890 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 173432,333  CC3  .22454306 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 173532,333  CC3  .22426090 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 173632,333  CC3  .22398240 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 173732,333  CC3  .22370723 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 173832,333  CC3  .22343607 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 173932,333  CC3  .22316773 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 174032,333  CC3  .22290307 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 174132,333  CC3  .22264173 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 174232,333  CC3  .22238373 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 174332,333  CC3  .22212873 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 174432,333  CC3  .22187723 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 174532,333  CC3  .22162857 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 174632,333  CC3  .22138306 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 174732,333  CC3  .22114073 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
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STATION  4 AT 174832,333  CC3  .22090140 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 174932,333  CC3  .22066473 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 175432,333  CC3  .21952540 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 175532,333  CC3  .21930573 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 175632,333  CC3  .21908857 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 175732,333  CC3  .21887440 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 175832,333  CC3  .21866273 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 175932,333  CC3  .21845340 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 180032,333  CC3  .21824690 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 180132,333  CC3  .21804273 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 180232,333  CC3  .21784090 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 180332,333  CC3  .21764173 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 180432,333  CC3  .21744490 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 180532,333  CC3  .21725023 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 180632,333  CC3  .21705823 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 181202,333  CC3  .21605023 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 181932,333  CC3  .21476026 05  TC= 300  TS=300  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 182902,333  CC3  .21329548 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 183902,333  CC3  .21191515 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 184902,333  CC3  .21068780 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 185902,333  CC3  .20959615 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 190902,333  CC3  .20862550 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 191902,333  CC3  .20776293 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 192902,333  CC3  .20699671 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 193902,333  CC3  .20631678 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 194902,333  CC3  .20571407 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 195902,333  CC3  .20518002 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 200902,333  CC3  .20470750 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 201902,333  CC3  .20428967 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 202902,333  CC3  .20392017 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 203902,333  CC3  .20359358 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 204902,333  CC3  .20330461 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 205902,333  CC3  .20304832 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038918.0 PASSID 02/333
STATION  4 AT 211702,333  CC3  .20265508 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038830.0 PASSID 02/333
STATION  4 AT 212702,333  CC3  .20246800 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038830.0 PASSID 02/333
STATION  4 AT 213702,333  CC3  .20229853 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038830.0 PASSID 02/333
STATION  4 AT 214702,333  CC3  .20214328 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038830.0 PASSID 02/333
STATION  4 AT 225302,333  CC3  .20126637 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038825.0 PASSID 02/333
STATION  4 AT 230702,333  C3   .18602043 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038779.0 PASSID 02/333
STATION  4 AT 231702,333  C3   .18590651 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038779.0 PASSID 02/333
STATION  4 AT 232502,333  C3  -.66403176 08  TC= 360  TS=360  W.C.= 314333  FREQ=        .0 PASSID  NONE
STATION  4 AT 233802,333  CC3  .20058247 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038830.0 PASSID 03/333
STATION  4 AT 234802,333  CC3  .20040043 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038830.0 PASSID 03/333
STATION  4 AT 000702,334  C3   .18558854 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 03/333
STATION  4 AT 001702,334  C3   .18556242 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 03/333
STATION  4 AT 002702,334  C3   .18554722 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 03/333
STATION  4 AT 003602,334  C3  -.66403237 08  TC= 480  TS=480  W.C.= 314333  FREQ=        .0 PASSID 03/333
STATION  4 AT 153532,334  CC3  .14846558 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 153632,334  CC3  .14849458 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 153732,334  CC3  .14852408 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 153832,334  CC3  .14855391 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 153932,334  CC3  .14858374 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 154032,334  CC3  .14861424 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 154132,334  CC3  .14864491 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 154232,334  CC3  .14867574 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 154332,334  CC3  .14870724 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 154432,334  CC3  .14873891 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 154532,334  CC3  .14877091 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 154632,334  CC3  .14880308 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 154732,334  CC3  .14883574 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 154832,334  CC3  .14886858 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 154932,334  CC3  .14890174 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 155032,334  CC3  .14893524 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 155132,334  CC3  .14896907 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 155232,334  CC3  .14900324 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 155332,334  CC3  .14903774 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
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STATION  4 AT 155432,334  CC3  .14907241 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 155532,334  CC3  .14910758 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 155632,334  CC3  .14914291 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 155732,334  CC3  .14917841 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 155832,334  CC3  .14921458 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 155932,334  CC3  .14925074 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 160032,334  CC3  .14928741 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 160132,334  CC3  .14932424 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 160232,334  CC3  .14936124 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 160332,334  CC3  .14939891 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 160432,334  CC3  .14943674 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 160532,334  CC3  .14947474 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 160632,334  CC3  .14951308 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 160732,334  CC3  .14955191 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 160832,334  CC3  .14959074 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 160932,334  CC3  .14962991 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 161032,334  CC3  .14966957 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 161132,334  CC3  .14970941 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 161232,334  CC3  .14974958 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 161332,334  CC3  .14979007 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 161432,334  CC3  .14983058 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 161532,334  CC3  .14987174 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 161632,334  CC3  .14991307 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 161732,334  CC3  .14995458 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 161832,334  CC3  .14999641 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 161932,334  CC3  .15003858 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 162032,334  CC3  .15008108 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 162132,334  CC3  .15012374 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 162232,334  CC3  .15016674 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 162332,334  CC3  .15021008 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
STATION  4 AT 162432,334  CC3  .15025358 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038745.0 PASSID 03/333
FREQUENCY CHECK FAILED AT 162932,334  STA  4    DATA VALUE 22038747.0,INPUT VALUE 22038745.0,DQ      2.0 CPS
STATION  4 AT 173532,334  CC3  .15399471 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 173632,334  CC3  .15405554 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 173732,334  CC3  .15411654 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 173832,334  CC3  .15417770 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 173932,334  CC3  .15423887 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 174032,334  CC3  .15430054 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 174132,334  CC3  .15436237 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 174232,334  CC3  .15442404 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 174332,334  CC3  .15448637 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 174432,334  CC3  .15454854 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 174532,334  CC3  .15461104 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 174632,334  CC3  .15467354 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 174732,334  CC3  .15473654 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 174832,334  CC3  .15479954 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 174932,334  CC3  .15486271 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 175032,334  CC3  .15492587 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 175132,334  CC3  .15498970 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 175232,334  CC3  .15505320 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 175332,334  CC3  .15511720 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 175432,334  CC3  .15518120 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 175532,334  CC3  .15524537 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 175632,334  CC3  .15530971 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 175732,334  CC3  .15537437 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 175832,334  CC3  .15543904 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 175932,334  CC3  .15550387 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 180032,334  CC3  .15556887 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 180132,334  CC3  .15563420 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 180232,334  CC3  .15569937 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 180332,334  CC3  .15576504 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 180432,334  CC3  .15583071 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 180532,334  CC3  .15589654 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 180632,334  CC3  .15596237 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 180732,334  CC3  .15602870 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 180832,334  CC3  .15609471 05  TC= 60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
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STATION  4 AT 180932,334  CC3  .15616137 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 181032,334  CC3  .15622787 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 181132,334  CC3  .15629454 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 181232,334  CC3  .15636137 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 181332,334  CC3  .15642837 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 181432,334  CC3  .15649554 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 181532,334  CC3  .15656287 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 181632,334  CC3  .15663020 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 181732,334  CC3  .15669787 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 181832,334  CC3  .15676554 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 181932,334  CC3  .15683321 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 182032,334  CC3  .15690137 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 182132,334  CC3  .15696937 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 182232,334  CC3  .15703754 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 182632,334  CC3  .15731170 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 182732,334  CC3  .15738054 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 182832,334  CC3  .15744937 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 182932,334  CC3  .15751871 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 183032,334  CC3  .15758771 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 183132,334  CC3  .15765704 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 183232,334  CC3  .15772654 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 183332,334  CC3  .15779587 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 183432,334  CC3  .15786570 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 183532,334  CC3  .15793537 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 183632,334  CC3  .15800537 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 183732,334  CC3  .15807521 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 183832,334  CC3  .15814537 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 183932,334  CC3  .15821537 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 184032,334  CC3  .15828571 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 184132,334  CC3  .15835620 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 184232,334  CC3  .15842670 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 184332,334  CC3  .15849704 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 184432,334  CC3  .15856804 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 184532,334  CC3  .15863854 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 184632,334  CC3  .15870954 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 184732,334  CC3  .15878037 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 184832,334  CC3  .15885154 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 184932,334  CC3  .15892254 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 185032,334  CC3  .15899370 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 185132,334  CC3  .15906504 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 185232,334  CC3  .15913654 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 185332,334  CC3  .15920787 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 185432,334  CC3  .15927954 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 185532,334  CC3  .15935104 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 185632,334  CC3  .15942270 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 185732,334  CC3  .15949454 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 185832,334  CC3  .15956637 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 185932,334  CC3  .15963821 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 190032,334  CC3  .15971037 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 190132,334  CC3  .15978237 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 190232,334  CC3  .15985437 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 190332,334  CC3  .15992654 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 190432,334  CC3  .15999887 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 190532,334  CC3  .16007121 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 190632,334  CC3  .16014371 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 190732,334  CC3  .16021587 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 190832,334  CC3  .16028854 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  4 AT 190932,334  CC3  .16036104 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 02/334
STATION  5 AT 214232,333  C3   .18799038 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038830.0 PASSID 01/333
STATION  5 AT 214832,333  C3   .18777649 05  TC= 180  TS=180  W.C.= 314333  FREQ=  2038830.0 PASSID 01/333
STATION  5 AT 215332,333  C3   .18760805 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038830.0 PASSID 01/333
STATION  5 AT 215427,333  C3  -.66404662 08  TC=  10  TS= 60  W.C.= 314333  FREQ=          .0 PASSID 01/333
STATION  5 AT 225132,333  C3  -.66404634 08  TC= 420  TS=420  W.C.= 314333  FREQ=          .0 PASSID 01/333
STATION  5 AT 230702,333  CC3  .17096550 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038779.0 PASSID 01/333
STATION  5 AT 231332,333  CC3  .17090611 05  TC= 180  TS=180  W.C.= 314333  FREQ=  2038779.0 PASSID 01/333
STATION  5 AT 232402,333  CC3  .17085717 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038779.0 PASSID 01/333
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FREQUENCY CHECK FAILED AT 233332,333  STA  5   DATA VALUE 22038779.0,INPUT VALUE 22038830.0,DQ    -51.0 CPS
STATION  5 AT 234732,333  C3   .18566538 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038830.0 PASSID 01/333
STATION  5 AT 001902,334  CC3  .17137317 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 002902,334  CC3  .17159304 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 003902,334  CC3  .17184724 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 004902,334  CC3  .17213357 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 005902,334  CC3  .17245027 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 010902,334  CC3  .17279561 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 011902,334  CC3  .17316731 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 012902,334  CC3  .17356361 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 013902,334  CC3  .17398267 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 014902,334  CC3  .17442228 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 020102,334  CC3  .17497383 05  TC= 240  TS=240  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 021102,334  CC3  .17545269 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 021832,334  CC3  .17582042 05  TC= 300  TS=300  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 023032,334  CC3  .17642458 05  TC= 420  TS=420  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 024502,334  CC3  .17717446 05  TC= 360  TS=360  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 030102,334  CC3  .17802062 05  TC= 120  TS=120  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 031102,334  CC3  .17855631 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 032102,334  CC3  .17909452 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 032832,334  CC3  .17949906 05  TC= 300  TS=300  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 040302,334  CC3  .18134506 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 041032,334  CC3  .18173879 05  TC= 300  TS=300  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 041802,334  CC3  .18212782 05  TC= 360  TS=360  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 042802,334  CC3  .18263839 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 043702,334  CC3  .18308927 05  TC= 480  TS=480  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 044532,334  CC3  .14831582 08  TC= 180  TS=180  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 045702,334  CC3  .18405359 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 050702,334  CC3  .18451397 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 051702,334  CC3  .18495761 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 052702,334  CC3  .18538334 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 053702,334  CC3  .18578979 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 054702,334  CC3  .18617547 05  TC= 600  TS=600  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 055302,334  CC3  .18639746 05  TC= 120  TS=120  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 060132,334  CC3  .18669634 05  TC= 420  TS=420  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 060832,334  CC3  .18693062 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 060932,334  CC3  .18696296 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 061032,334  CC3  .18699496 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 061132,334  CC3  .18702696 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 061232,334  CC3  .18705879 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 061332,334  CC3  .18708996 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 061432,334  CC3  .18712146 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 061532,334  CC3  .18715212 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 061632,334  CC3  .18718296 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 061732,334  CC3  .18721346 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 061832,334  CC3  .18724346 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 061932,334  CC3  .18727346 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 062032,334  CC3  .18730329 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 062132,334  CC3  .18733262 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 062232,334  CC3  .18736162 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 062332,334  CC3  .18739096 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 062432,334  CC3  .18741929 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 062532,334  CC3  .18744779 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 062632,334  CC3  .18747596 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 062932,334  CC3  .18755879 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 063032,334  CC3  .18758596 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 063132,334  CC3  .18761279 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 063232,334  CC3  .18763946 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 063332,334  CC3  .18766546 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 063432,334  CC3  .18769179 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 063532,334  CC3  .18771746 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 063632,334  CC3  .18774296 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 063732,334  CC3  .18776796 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 063832,334  CC3  .18779312 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 063932,334  CC3  .18781779 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 064032,334  CC3  .18784196 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
```

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STATION  5 AT 064132,334  CC3  .18786629 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 064232,334  CC3  .18788996 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 064332,334  CC3  .18791362 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 064432,334  CC3  .18793696 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 064532,334  CC3  .18795996 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 064632,334  CC3  .18798279 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 070032,334  CC3  .18827162 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 070132,334  CC3  .18829012 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 070232,334  CC3  .18830829 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 070332,334  CC3  .18832612 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 070432,334  CC3  .18834396 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 070532,334  CC3  .18836113 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 070932,334  CC3  .18842746 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 071232,334  CC3  .18847462 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 071332,334  CC3  .18848912 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 071432,334  CC3  .18850362 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 071532,334  CC3  .18851812 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 071632,334  CC3  .18853229 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 071932,334  CC3  .18857246 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 072032,334  CC3  .18858546 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 072132,334  CC3  .18859796 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038780.0 PASSID 01/334
STATION  5 AT 073332,334  C3   .17864937 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  5 AT 073432,334  C3   .17881187 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  5 AT 073532,334  C3   .17962154 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  5 AT 073632,334  C3   .18151437 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  5 AT 073732,334  C3   .18314287 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  5 AT 073832,334  C3   .18240487 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  5 AT 073932,334  C3   .18053221 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  5 AT 074032,334  C3   .17908587 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  5 AT 074132,334  C3   .17773937 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  5 AT 074232,334  C3   .17642537 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  5 AT 074332,334  C3   .17514587 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
STATION  5 AT 074432,334  C3   .17367871 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038770.0 PASSID 01/334
LOGICAL TRANSMITTER ERROR AT 234402,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 234502,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 234602,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 234702,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 234802,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 234902,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 235002,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 235102,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 235202,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 235402,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 235502,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 235602,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
LOGICAL TRANSMITTER ERROR AT 235802,334  STA  5 RECEIVING  C3  FROM STA  5  DATA TYPE IGNORED.
STATION  5 AT 005332,335  CC3  .15063129 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 005432,335  CC3  .15069879 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 005532,335  CC3  .15076612 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 005632,335  CC3  .15083395 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 005732,335  CC3  .15090195 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 005832,335  CC3  .15096995 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 005932,335  CC3  .15103845 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 010032,335  CC3  .15110695 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 010132,335  CC3  .15117562 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 010232,335  CC3  .15124445 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 010332,335  CC3  .15131362 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 010732,335  CC3  .15159179 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 010832,335  CC3  .15166195 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 010932,335  CC3  .15173195 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 011032,335  CC3  .15180229 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 011132,335  CC3  .15187295 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 011232,335  CC3  .15194362 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 011332,335  CC3  .15201462 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 011432,335  CC3  .15208545 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 011532,335  CC3  .15215679 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
```

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STATION  5 AT 011632,335  CC3  .15222829 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 011732,335  CC3  .15229979 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 011832,335  CC3  .15237145 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 011932,335  CC3  .15244345 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 012232,335  CC3  .15265995 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 012332,335  CC3  .15273262 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 012432,335  CC3  .15280529 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 012532,335  CC3  .15287812 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 012832,335  CC3  .15309762 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 012932,335  CC3  .15317095 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 013032,335  CC3  .15324462 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 013132,335  CC3  .15331845 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 014132,335  CC3  .15406345 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 014232,335  CC3  .15413862 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 014332,335  CC3  .15421412 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 014432,335  CC3  .15428945 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 014532,335  CC3  .15436529 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 014632,335  CC3  .15444079 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 014732,335  CC3  .15451662 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 014832,335  CC3  .15459279 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 014932,335  CC3  .15466895 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 015032,335  CC3  .15474495 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 015132,335  CC3  .15482145 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 015232,335  CC3  .15489762 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 015332,335  CC3  .15497445 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 015432,335  CC3  .15505095 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 015532,335  CC3  .15512779 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 015632,335  CC3  .15520462 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 015732,335  CC3  .15528162 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 015832,335  CC3  .15535862 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 015932,335  CC3  .15543595 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 020032,335  CC3  .15551312 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 020132,335  CC3  .15559045 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 020232,335  CC3  .15566795 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 020332,335  CC3  .15574562 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 020432,335  CC3  .15582329 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 020532,335  CC3  .15590095 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 020632,335  CC3  .15597862 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
STATION  5 AT 020732,335  CC3  .15605679 05  TC=  60  TS= 60  W.C.= 314333  FREQ=  2038760.0 PASSID 01/334
```

SUMMARY OF DATA NOT USED LISTED BELOW BY REASON. STATION=	1	2	3	4	5	6	7	8	9	10
DATA REJECTED BY BAD FREQUENCY OR MISSING TDA INPUT	0	36	0	4	1	0	0	0	0	0
DOPPLER AND RU REJECTED BY LOGICAL TRANSMITTER ERRORS	0	0	0	0	13	0	0	0	0	0
BAD ANGLES NOT IN AUTO TRACK THAT WERE REJECTED	0	12	0	0	20	0	0	0	0	0
MANUAL MODE DSIF DATA THAT WAS NOT USED (DC2=4,5)	0	2	0	0	0	0	0	0	0	0
OUT OF LOCK AMR DATA THAT WAS NOT USED	0	0	0	0	0	0	0	0	0	16
GOOD DOPPLER IGNORED BY CONTROL CARD	0	0	0	317	62	0	0	0	0	902
GOOD ANGLES IGNORED BY CONTROL CARD	0	968	0	1928	1091	0	0	0	0	902

SUMMARY OF DATA TYPES ON THE ODP DATA FILE

STATION	R	DR	EL	AZ	DEC	HA	C1	CC3	C3	D1	RU
2	0	0	0	0	0	0	0	364	80	0	0
4	0	0	0	0	0	0	0	389	7	0	0
5	0	0	0	0	0	0	0	147	18	0	0

```
THE TAPE LABEL ON THE SAVED ODP FILE FOLLOWS....
ODP FILE SAVED ON 11/29/64, AT 19 29 30, ON COMPUTER B
ODG IS FINISHED AND IS RETURNING TO SYSTEM.
```

RE-ORDER No. 65-205

JET PROPULSION LABORATORY — INTEROFFICE MEMO

TO: Users of ODG — DATE: October 25, 1965

FROM: D. M. Jacobs — REF: 315.22/13

SUBJECT: Addendum 4 to the "User's Guide to the Tracking Data Processor and Orbit Data Generator Programs" Concerning the ODG

REFERENCE: R. E. Holzman, "User's Guide to the Tracking Data Processor and Orbit Data Generator Programs", Reorder No. 65-205, 27 May 1965.

The following additions and changes have been incorporated into the ODG and are on Surveyor, Lunar Orbiter, and Pioneer flight tapes. All of the items refer to Part II of the aforementioned User's Guide.

1. Section 2.0, page II-2, the example of the ODG source deck no longer needs CONST5 = .41 in the source deck and this card should not be present. The program has been reassembled to use this value as a nominal value.

2. Section 4.3, page II-6, the following control types should be added to the ten already listed:

   SHIFT TIME
   ADJUST
   RANGE FACTOR

3. The following paragraphs should be added after 4.3.7, but before 4.4:

   4.3.8 SHIFT Card

   The general form of the SHIFT Card is:
   SHIFT TIME A, (TIME BRACKET), Station I
   where:

   A = amount (in seconds) to time shift data. The shift is applied to all data types from the station. For doppler data, the correction is applied after the compression. "A" may be fixed or floating point, and positive or negative. For each data point that is time corrected, a line showing this correction will precede the printing of this point on both IBM1401 and SC3070 output. For example:

TION N TIME CORRECTED. TIME A=hhmmss.sss, day GMT DV=.xxxxxxxx xx TIME C=hhmmss.sss, day GMT

would appear before every point that is time corrected.

where:

N = station number (1,. . .,15)
TIME A = time that is to be shifted (in GMT)
DV = amount of the time shift
TIME C = result of the time correction (in GMT)

When any point has been time shifted, the comment:

PLEASE NOTE - DATA VALUES ADJUSTED BY POLY

is printed just above the ODP data file summary.

4.3.9 ADJUST Card

The general form of the ADJUST card is:
ADJUST xxx BY N, (TIME BRACKET), STATION I
where:

XXX = one or more of R, DR, EL, AZ, C1, CC3, C3, RU, DEC, HA, ANGLES, ANGLE, DOPPLER.

N = amount that the data value is to be adjusted in the same units as the data type xxx. The number may be floating or fixed point and positive or negative.

The adjust card is to be used to eliminate the bias error in a data point, after it has been processed by all ODG routines (angle corrector, doppler bias stripper, etc.). If Xo represents a processed point, and X represents the same point after modification, the data point within the specified time range is modified by:

$$X = Xo + N$$

For each point that is adjusted, a line of output precedes the printing of this point. For example:

STATION N YYY CORRECTED. YYYA=.xxxxxxxx xx DV=.xxxxxxxx xx YYYC=.xxxxxxxx xx hhmmss.sss, day GMT

would appear before every point that is adjusted.

Where:

N = station number (1, . . ., 15)
YYYA = data type to be adjusted
DV = amount that is to be corrected
YYYC = result of the adjustment
hhmmss.sss, day = GMT time of the data point

When any point has been adjusted, the comment:

PLEASE NOTE - DATA VALUES ADJUSTED BY POLY

is printed just above the ODP data file summary.

4.3.10 RANGE FACTOR Card

The general form of the RANGE FACTOR card is:
RANGE FACTOR N, (TIME BRACKET), STATION I
where:

N = fixed or floating point dimensionless number

The RANGE FACTOR card is to be used in conjunction with the CHANGE RANGE RECYCLE card (see No. 8 for an explanation of this card) to eliminate sawtooth errors in range data points. Sawtooth corrections are applied to the range data type only as follows:

$$X = NXo - (N-1)\ KM$$

where:

Xo = data point before the sawtooth error has been removed
N = range factor value
M = range recycle value (in km) for this station
K = integer portion of Xo/M
X = data point after the correction

For each range point that is corrected, the following line or point would precede the printing of the point:

STATION N RANGE CORRECTED. RANGE A=xxxxxxxx xx DV=.xxxxxxxx xx RANGEC=.xxxxxxxx xx hhmmss.sss,day GMT

where:

RANGE A = Uncorrected range value
DV = Amount of the correction
RANGE C = the corrected data point
hhmmss.sss, day = GMT time of the point

When any point has been corrected the comment:

PLEASE NOTE - DATA VALUES ADJUSTED BY POLY

is printed just above the ODP data file summary.

4. The following paragraph should replace the first paragraph in 4.4 (everything under 4.4 on page II-11.)

4.4 IGNORE Card Logic

The general form of the IGNORE card is
IGNORE XXX, (TIME BRACKET), STATION I

where:

XXX = one or more of R, DR, EL, AZ, DEC, HA, C1, CC3, C3, RU, ANGLES, ANGLE, DOPPLER. For example:

IGNORE HA, DOPPLER, STATION 4

will ignore hour angle and doppler (all types).

5. Section 4.5, REMOVE and PRINT Cards, page II-13 should be amended as follows:

   a. REMOVE FREQUENCIES STATION I should read REMOVE FREQS STATION I

   b. REMOVE SHIFTS
      REMOVE ADJUSTS
      REMOVE RANGE FACTORS

      should be added to the list

   c. The two examples at the bottom of the page which reads: PRINT FREQUENCIES STATION 2 should read: PRINT FREQS STATION 2 in both cases.

6. Section 4.6, CHANGE Cards, page II-15

   The description of the CHANGE RATE card should be replaced by the following:

   CHANGE RATE N

   This card may be used to reduce the number of points sent to the ODP File. If a value of N is used, every (N + 1)th point will be sent to the ODP File. This card remains in effect until the program is aborted. If it is to be removed, use CHANGE RATE 0.

7. Section 4.6, CHANGE Cards, page II-16

   The description of the CHANGE NO ANGLE CORRECTIONS should read:

   CHANGE NO ANGLE CORRECTIONS

   This card is used to suppress angle corrections. Refer to Appendix F for a description of the angle corrections. It is effective for one run.

8. The following should be added at the end of 4.6 and before 4.7:

CHANGE RANGE RECYCLE M STATION I

This card is used to change the range recycle table. A range recycle value is stored for each station I. See number 13 for the nominal range recycle values. This card is used in conjunction with the RANGE FACTOR card to correct sawtooth errors in the data. (See number 3, Section 4.3.10 for further explanation).

9. The last sentence of 4.7, Comment Cards, page II-16, should be deleted. The dollar sign option now works.

10. The following symbol should be added to ODGLK1, Appendix A, Section A.1, page AII-1:

A.1 ODGLK1

RANREC: This references the end of a 15-word table that defines the range recycle values for the range factor computation for each station. RANREC-J = range recycle values for station J.

11. The IMAXEL table in Appendix A, Section A.1.1, page AII-3, should be changed so that all stations now have the nominal value of 1.0.

12. The IMINEL table in Appendix A, Section A.1.1, page AII-3 should be changed so that stations 1-5 have the nominal value of 0.0.

13. A new table should be added to Appendix A, Section A.1.1, Nominal Values, after the IMINEL table:

Station	Range Recycle Value (KM)
1	1×10^{20}
2	1×10^{20}
3	1×10^{20}
4	1×10^{20}
5	1×10^{20}
6	1×10^{20}
7	1×10^{20}
8	1872.805
9	1872.805
10	1×10^{20}
11	1×10^{20}
12	1×10^{20}
13	1×10^{20}
14	1×10^{20}
15	1×10^{20}

14. The following symbols are additions to Appendix A, Symbols Allowed in the ODG Source Deck, page AII-4:

A.2 ODGLK2

ANGSTA This symbol references the end of a 15-word table that indicates that angle corrections are to be made to a station. ANGSTA-J $\neq$ 0 implies that angle corrections are to be performed to angle pairs from Station J.

STA1
STA2
.
.
STA15 These symbols reference the beginning locations of 32-word tables giving the angle correction coefficients (Fearey constants) for each station. The coefficients are to be input in the following order:

A00, B00, A10, B10, A20, B20, A30, B30, A01, B01, A11, B11, A21, B21, A31, B31, A02, B02, A12, B12, A22, B22, A32, B32, A03, B03, A13, B13, A23, B23, A33, B33.

At the present time, only nominal values for stations 4 and 5 (DSIF 41 and DSIF 51) are stored. See Appendix F for their values.

15. Appendix B, Control Record Format: Disc, page BII-1 should be amended as follows:

a. Under the explanation of Word 1, Bits 21-28, the following Control Record Types should be added:

108 = RANGE FACTOR
110 = SHIFT TIME
16-32 = ADJUST (SPECIFIES DATA TYPE)

b. Word 6 should read as follows:

6 CONTROL INFORMATION
FREQUENCY (FLOATING PT)
TRANSMITTER ID (BEACON IS 127)
PASSID (BCD)
COUNT TIME (FLOATING PT)
SAMPLE TIME (FLOATING PT)
SHIFT TIME (FLOATING PT)
RANGE FACTOR (FLOATING PT)
ADJUST (FLOATING PT)
IGNORE

Bits

1-1 Same as ODP File
Data type assignment

16. The following should be added to Appendix F, Section F.1, page FII-1:

Corrections to angle pairs from any station 1-15 may be done in the ODG. To do angle corrections to any station other than 4 or 5 (DSIF 41 or DSIF 51), set ANGSTA-J $\neq$ 0 in the source deck, and read in the corresponding coefficients starting at STA(J) through the source deck, according to the order described in number 14 above.

17. The table of the sines and cosines of the geodetic latitude listed at the end of Appendix F, page FII-3, and the last paragraph of the same appendix should read as follows:

Station	SIN ϕ	COS ϕ
1	.57711	.81666
2	.57913	.81523
3	-.57929	.81518
4	-.52076	.85370
5	-.43663	.89964
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	.57785	.81614
13	.64851	.76121
14	.57963	.81487
15	0	0

These constants can be changed by program reassembly or in the source deck. Symbols are defined as SINL and COSL; these symbols are used in the same way as MAXEL and MINEL (see Appendix A).

18. ODG DISC ALLOCATION as shown in Appendix J, page JII-1, Section J.4, should be amended to read as follows:

Record	Contents
1-3000	MASTER FILE 1
3001	MASTER FILE 1 STATION SUMMARIES
3002	MASTER FILE 2 STATION SUMMAIRES
3003-6002	MASTER FILE 2
6003-6202	CONTROL TABLE FOR FILE 1
6203-6402	CONTROL TABLE FOR FILE 2
6403-7794	UNUSED
7795-7897	TDP REJECTED DATA
7898-7899	ODP FILE SUMMARIES
7900-8099	(USED BY TDP)
8100-8234	INPUT BUFFER FOR CONTROL CARDS (SHARED WITH TDP ALLOCATION)

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